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LESSONS IN COOKERY
FOOD ECONOMY

HOME ECONOMICS SERIES

LESSONS IN COOKERY

BOOK ONE FOOD ECONOMY

By

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RAND McNALLY & COMPANY

CHICAGO

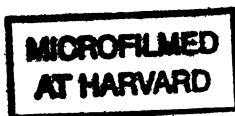
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THE PREFACE

This volume, like its companions of the series, *Diet for Adults*, *Diet for Children*, and *Diet for Invalids*, is designed primarily for the high-school student of home economics. It covers a semester's work, containing forty cooking lessons, two for each week of the semester; two fifty-minute or two sixty-minute periods, not less time, are recommended for each lesson. The lessons are planned according to foods in season from September to February. The Appendix contains optional work, to be assigned at the discretion of the teacher as recitation or home work to meet the varying requirements for credit in home economics.

All persons agree that the spending of money is as important as the earning of money. *Food Economy* contains forty cooking lessons based roughly on economic values. The lessons consist of work with menus and recipes for the reduction of the high cost of living. It is hoped that the book will prove to be of some value during the hard times due to the war. Special attention is called to the original series of complete-dish recipes and the opportunity it offers for the use of left-over food. (A few expensive ingredients, however, are mentioned in certain recipes in the book; these are given merely to round out recipe ideas.) The instructor may avoid too great an expense for the school by having the pupils bring from home many ingredients, such as foods for drying and canning, and left-overs for use in the complete-dish series; for example, a protein food or a starchy food may be brought for each of the complete-dish lessons.

The book is arranged topically, but suggestions for definite lessons precede each section. It is not imperative that the topics or the lessons be presented in the order given; season and market conditions often necessitate a change. The aim has been to include only such cooking lessons as illustrate some economic or dietetic principle; recipes are constructed and grouped according to their economic and food values. The dietetic principle has been exalted above the application of the principle; in other words, the grouping of recipes under a principle to be illustrated has made the comprehension of the law of more importance than the use of the recipes themselves.

The book presupposes little, if any, preliminary training in general science or in cookery. It is in condensed and summarized form, making quick reading possible, and has been kept as simple as feasible. Much chart work is given, but only the minimum of experimental work. The aim has been to avoid text as far as possible and to give the subject matter in the form of laboratory problems which will develop initiative and responsibility in the pupil. Thus, particularly in the Appendix, the book carries out to a marked degree the project or problem method of teaching. The author hopes that the book will be an aid to that kind of teaching which helps the student, whether in the school or in the home, to help herself. The author believes in individual work for the pupil, not group work; the class recipes will be found helpful, especially to beginning teachers.

The lessons in the last three books of the series are also arranged in sequence according to season: Book Two, February to June; Book Three, September to February; Book Four, February to June. The recipes in the four books have been carefully tested. Bread and butter and relishes, unless specified, are understood in any menus given. Since each book is a unit in itself, it is not essential to teach the entire series to a given class of pupils, although it is very desirable to do so. The series is recommended for use by either the younger or the older girls in high school. However, the author believes that the more mature mind is better fitted for a study of dietetics.

Each of the four books is also published in the form of a loose-leaf "filler" suitable for class use. Loose-leaf books in general offer great flexibility for the teacher and student, having already proved their value in the botanical and other high-school science laboratories. Such books form a framework for the teaching of any given course, and are time-savers in that the pupil is spared mechanical copying of such material as charts and recipes. As a sheet is required for a lesson, it is removed from the "filler" and placed in an inexpensive notebook cover. A loose-leaf laboratory book is distinctly a pupil's book, not a teacher's. Some scheme should be devised for keeping the recipe sheets clean during the lesson period; one possible way is to post a few extra copies on the wall of the laboratory. The loose-leaf plan allows opportunity for added experimental work at the discretion of the teacher; it also allows space for additional recipes and mounted illustrations and other clippings from newspapers and magazines.

It is hoped that all the volumes will prove useful to homekeepers. The bound books may be preferred by homekeepers, the loose-leaf by school girls.

The series was developed as a result of a number of years' teaching experience in the Wendell Phillips and the Murray F. Tuley High Schools of Chicago. In addition, three years were spent by the author as critic teacher of grade cooking in the Chicago Normal School.

The author wishes to express thanks to Professor Mary D. Chambers, B. S., A. M., formerly of Rockford College, whose interest and coöperation have been invaluable in the accomplishment of the work of the series. The author is also greatly indebted to Dr. A. D. Emmett, formerly of the University of Illinois Agricultural Experiment Station, for his criticism of several topics in *Food Economy* and for his coöperation in preparing the marketing diagrams and tables on meat. (These diagrams and tables are the result of a careful study of recent packing-house data and of reliable bulletins, such as *Bulletin 158* of the University of Illinois Agricultural Experiment Station, by L. D. Hall and A. D. Emmett.) Thanks are due to the University of Illinois Agricultural Experiment Station for the use of the excellent meat cuts, and also to Teachers College, Columbia University, for the use of an important photograph. Acknowledgment is made of the training received at Pratt Institute. Finally, the author wishes to express gratitude to her pupils, the industry and enthusiasm of whom have given the impetus for the development of the series.

F. E. S.

PART I
INTRODUCTION

FOOD ECONOMY

CLASSIFICATION OF FOODS

I. INORGANIC FOODS

Inorganic foods include the following:

1. Water.
2. Mineral constituents; the following foods are among those characterized by a relatively high mineral content:

Beans, peas, lentils
Skim milk

Asparagus, celery, spinach
Oranges, raspberries, rhubarb

II. ORGANIC FOODS

Organic foods include the three following groups:

1. NON-NITROGENOUS FOODS These are often called carbonaceous foods; they include the following:	2. NITROGENOUS OR PROTEIN FOODS The following foods are characterized by protein:	3. CARBO-NITROGENOUS FOODS These are the most nearly perfect foods; the following foods contain a fairly good balance of carbonaceous and protein material:
<p><i>Foods characterized by fat:</i></p> <p>SOLID FOODS</p> <p>Bacon</p> <p>Butter and butter substitutes</p> <p>Pork, salt</p> <p>Etc.</p> <p>LIQUID FOODS</p> <p>Cream</p> <p>Oils</p> <p><i>Foods characterized by starch:*</i></p> <p>Potatoes</p> <p>Rice</p> <p>Etc.</p> <p><i>Foods characterized by sugar:*</i></p> <p>Candies</p> <p>Fruits, dried</p> <p>Jellies</p> <p>Sirups (honey, etc.)</p>	<p>Cheese</p> <p>Eggs</p> <p>Fish</p> <p>Poultry</p> <p>Meat, lean</p> <p>Gelatin†</p>	<p><i>Breakfast cereals:</i></p> <p>Wheat</p> <p>Oats</p> <p>Etc.</p> <p><i>Flour mixtures:</i></p> <p>Bread, crackers, etc.</p> <p>Pastes (such as macaroni and noodles)</p> <p><i>Legumes, dry:</i></p> <p>Beans</p> <p>Lentils</p> <p>Peanuts</p> <p>Peas</p> <p><i>Nuts:</i></p> <p>Almonds</p> <p>Pecans</p> <p>Walnuts (English)</p> <p>Etc.</p> <p><i>Milk</i></p>

* Starch and sugar are the chief members of a group of foods called carbohydrates; fats are not included in the group.

† Gelatin is an "incomplete" protein. As a sole protein food in the diet it is not adequate for the maintenance of nitrogen equilibrium. Study Sherman, *Chemistry of Food and Nutrition*, page 302.

Notes:

1. The functions of foods are as follows:

- To yield energy for heat and work
- To build tissue
- To regulate body processes

Foods of each of the three types should be represented in each day's menu. (See Book IV.)

FOODS WHICH FURNISH ENERGY	FOODS WHICH BUILD TISSUE	FOODS WHICH REGULATE BODY PROCESSES
Fatty foods	Protein foods	Foods rich in mineral salts and organic acids†
Carbohydrate foods	Foods rich in mineral salts, such as calcium salts	Water†
Protein foods*		

The carbo-nitrogenous foods contain an abundance of both carbon and nitrogen, and hence serve both the following purposes:

- Yield energy
- Build muscle and other tissue

2. The following protein foodstuffs are found to a greater or less extent in many of the nitrogenous and carbo-nitrogenous foods. Pupil to specify where these are found:

Albumin
Casein
Gelatin
Gluten
Legumin
Myosin

3. The following carbohydrate foodstuffs are found to a greater or less extent in many of the non-nitrogenous and carbo-nitrogenous foods. Pupil to specify where these are found:

Cellulose
Gums
Starch
Sugars

4. Pupil to define the terms *food* and *foodstuff*.

5. *To the teacher:* Opportunity is given in Book One for teaching the principles underlying the cooking of carbohydrates, fats, and proteins, such as:

STARCH	SUGAR	FAT	PROTEIN
Boiled potatoes	Canned foods	Fried foods	Cheese dishes
Boiled rice	Jellies	Sautéed foods	Egg dishes
White sauce			Fish dishes
			Legume dishes
			Meat dishes

* Protein foods are, as a rule, an extravagant source of energy.

† Fruits and vegetables are especially rich in mineral salts, organic acids, and water, as well as in accessory substances.

EFFECTS OF HEAT, MOISTURE, AND MECHANICAL ACTION ON THE COOKING OF FOODS

I. DRY HEAT

(Baking, broiling, and oven-roasting)

1. Melts sugar and changes it to (a) barley sugar, (b) caramel.
2. Browns starch and changes it to dextrin.
3. Melts fat and may finally scorch it. Beware of the scorching point, since irritating substances may be formed.
4. Hardens (coagulates) and toughens some proteins, such as albumin and gluten.
5. Evaporates water and expands steam.
6. Expands air and carbon dioxide, as used for leavening purposes.
7. Alters and volatilizes some salts, such as calcium carbonate and sodium chloride.
8. Develops the flavoring substances of foods, as in meats.

II. COLD WATER

1. Dissolves sugar (one-half its volume of sugar).
2. Has little or no effect on starch.
3. Dissolves albumin, and with the salts present dissolves some of the globulin.
4. Softens and swells gelatin.
5. Dissolves common salt (almost one-third its volume of salt).
6. Dissolves certain of the mineral salts occurring naturally in foods.
7. Dissolves the extractives of meat and the flavoring substances of other foods.

III. BOILING WATER

1. Dissolves sugar (an equal volume).

The sugar turns to glucose and fructose if the heat is long continued; if a little acid is added, these are formed more quickly. (Cold water plus acid will turn sugar to glucose and fructose if the mixture is allowed to stand. Note, for example, that both glucose and fructose are formed in lemonade [strained] after it has stood 24 hr. or longer.)

2. Swells starch grains and makes them more porous, hence more digestible. The starch turns to glucose if the heat is long continued; if a little acid is added, the glucose is formed more quickly.

3. Disintegrates cellulose. The addition of either a little acid or a little alkali assists in disintegrating the cellulose.

4. Melts fats, and on long action changes some fats to fatty acids, which add to the flavor of foods.

5. Hardens (coagulates) albumin. The addition of acid to the water in certain proportions increases the toughening effect at first, but upon continued heating it decreases this toughening effect.

6. Dissolves gelatin.

7. Softens connective tissue (collagen) and finally changes it into more or less soluble forms, such as gelatin. The addition of a little acid increases the effect of water.

8. Dissolves common salt (one-third its volume of salt).

9. Dissolves certain of the mineral salts occurring naturally in foods.

10. Dissolves the extractives of meat and the flavoring substances of other foods.

IV. MECHANICAL ACTION

1. Pounding softens the fibers of both animal and vegetable foods. (Pupil to define *connective tissue* and *cellulose*.)

2. Beating incorporates air in the following substances, and so makes them light:

Albumin

Gelatin

Gluten

All three of these substances are viscous or sticky in character. Gluten is exceedingly elastic.

Notes:

1. In the first three sections of the résumé the food constituents are considered in the following order:

Carbohydrates

Fats

Proteins

Water

Mineral salts

Organic extractives (see Note 2):

a. Non-nitrogenous substances (lactic acid, etc.)

b. Nitrogenous non-protein substances (such as creatin)

c. Food hormones or vitamins, and other accessory substances

d. Fatty acids (formed during cooking of fats)

2. It is thought by some that certain members of each of the three preceding groups *a*, *b*, and *d* contribute to the flavor of cooked foods.

3. An important point to remember in cooking is that in general high temperature produces high flavor in foods; that is, flavor varies as the temperature, provided the cooking does not continue too long.

HIGH-TEMPERATURE COOKING

Broiling

Oven roasting

Sautéing

Frying

Cooking in steam under pressure, with a temperature over 212° F., or 100° C., as in steam ovens, high-pressure cookers, etc.

LOW-TEMPERATURE COOKING

Boiling and stewing

Cooking in steam at 212° F., or 100° C.

Cooking in a double boiler

Cooking in a fireless cooker

GENERAL INFORMATION

TABLE OF ABBREVIATIONS

spk. = peck	pk. = peck	sec. = second
d. = drop	oz. = ounce	min. = minute
ssp. = saltspoon	lb. = pound	hr. = hour
t. = teaspoon	pkg. = package	C. = calorie
tb. = tablespoon	h. = heaping	°F. = degrees Fahrenheit
c. = cup	b.p. = baking powder	°C. = degrees Centigrade
pt. = pint	tt. = test-tube	
qt. = quart	" = inch	

/ denotes a fraction: $\frac{1}{2}$ c. = one-half cup

- denotes gradation: 1-2 c. = 1 to 2 c.

TABLE OF MEASURES

dash = one sprinkle	4 c. = 1 qt.
4 ssp. = 1 t.	2 c. butter = 1 lb.
3 t. = 1 tb.	4 c. flour = 1 lb.
16 tb. = 1 c.	1 egg = 4 tb.
2 c. = 1 pt.	

TABLE OF OVEN TEMPERATURES*

OVEN	°F.	°C.
Slow	250-300	(Pupil to supply)
Moderate	350-400	
Hot or "quick"	400-450	
Very hot	450-550	

TABLE OF MISCELLANEOUS TEMPERATURES†

PROCESS	°F.	°C.
Simmering of water.....	180-210	82-99
Double boiler, top part.....	192-201	89-94
Boiling water at sea level.....	212	100
Jellies (boiling point of water 100° C.).....	185	103
Coagulation of albumin.....	133-160	(Begins at 56; is completed at 71)
Cheese-making.....	98.6-140	37-60 (Depends upon acidity)
Raising of bread (temperature of room).....	79-104	26-40
Baking of bread—temperature of center of oven.	356-428	180-220

**Technical Education Bulletin 22*, Columbia University, "Some Attempts to Standardize Oven Temperatures for Cookery Processes," by Van Arsdale.

†Adapted from table, page 17, "Fats and Oils in Cookery: Cooking Temperatures," *University of Illinois Bulletin*, Vol. XIV, No. 47.

MISCELLANEOUS STATEMENTS

1. Unless otherwise specified, all measurements are level. All leveling of ingredients in cups, spoons, etc., should be done with the flat side of a spatula, not the edge.

2. Possible reasons for discrepancies which may arise in the recipes are:

a. Lack of standardization as to the size of spoons, "measuring" cups, etc. (Most saltspoons sold are not of standard size.)

b. Varying degrees to which flour and other ingredients are packed.

3. The following rules concerning flour mixtures should be observed:

a. Measure flour for baking after the first sifting; this rule applies as well to quantity of flour mentioned in all standard cookbooks.

b. Dip flour lightly into a cup by spoonfuls; do not pack by scooping with the cup or shaking the cup; aim to *keep* the flour light. In measuring a fraction of a cup, level with a spoon, do not shake. Rules *a* and *b* apply also to certain other dry ingredients which pack easily, such as powdered sugar.

c. Pastry and bread flours may be used interchangeably in all recipes, as desired, but note that less liquid is required with pastry than with bread flour; an average rule is to allow $1\frac{1}{8}$ c. pastry flour to 1 c. bread flour. Brands of both bread and pastry flours vary greatly as to their requirements for liquid, hence no set rule can be given.

d. The first figure of the ratios 1:1, 2:1, 3:1, etc., as applied to flour mixtures = flour; second figure = wetting.

e. In all recipes, sour milk and soda may be substituted for sweet milk and baking powder.

4. In most cases, the class recipe is placed at the left of the corresponding large recipe.

5. As a rule, all class recipes should be cooked more quickly than the large recipes, proportionately speaking; otherwise they dry out. This applies particularly to the cooking of meats and to baking in general.

6. Note directions for changing °C. to °F., and vice versa (parentheses are used in the second statement, but not in the first):

$$\frac{9}{5}^{\circ}\text{C.} + 32 = ^{\circ}\text{F.}$$

$$\frac{5}{9} (^{\circ}\text{F.} - 32) = ^{\circ}\text{C.}$$

7. The term "calorie," as used in the manuals, means the greater calorie, that is, the amount of heat required to raise the temperature of 1 kg. of water 1°C.; this is very nearly the same as the heat required to raise 4 lb. of water 1°F.

PART II
PRESERVATION OF FOODS

SUGGESTIONS FOR LESSONS

PRESERVATION BY REMOVAL OF WATER

1. Dried fruit—apples; dried vegetables—tomatoes

PRESERVATION BY MOIST HEAT

2. Canned vegetables—tomatoes (cold-pack)
3. Canned fruit—peaches or plums (cold-pack)
4. Canned grape juice (cold-pack)
5. Canned vegetable seasoning mixture (hot-pack)

PRESERVATION BY ACID

6. Sweet-pickled peaches or sweet peppers (hot-pack)
7. Mustard pickles (hot-pack)

PRESERVATION BY A LARGE QUANTITY OF SUGAR

8. Economical marmalades—fruit butter or tomato-raisin conserve
9. More expensive marmalades—plum-orange conserve
10. First-extraction jelly from grapes, apples, or other ideal jelly fruit

SECOND- AND THIRD-EXTRACTION JELLY

11. Second-and third-extraction jelly from grapes, apples, or other ideal jelly fruit

PRESERVATION OF FOODS BY REMOVAL OF WATER

Drying is a simple process and a method worthy of present-day use in the home. Practically all fruits and vegetables may be dried at home and stored for future use.

The following are some of the advantages of drying fruits and vegetables in the home:

- a. Little or no expense is involved; this point is of special importance when cans are so expensive that canning of foods is impracticable.
- b. Means of saving large quantities of surplus products which go to waste each year in gardens and fruit plots.
- c. Means of conserving portions of food which are too small for canning.

Water is all that is removed from the food by the drying process; the texture, flavor, and food value are not injured. One hundred pounds of certain fresh vegetables will reduce to 10 pounds in drying without loss of flavor or food value.

To restore the water, soak the dried food for several hours, or over night. Once soaked, dried vegetables and fruits can be cooked in almost any of the ways in which fresh ones are cooked.

Pupil to study various references on drying, such as the following:

- a. *Farmers' Bulletin 841*, U.S. Department of Agriculture, "Drying Fruits and Vegetables in the Home."
- b. *Home Drying Manual for Vegetables and Fruits*, published by the National Emergency Food Garden Commission, Washington, D.C.

Fruits and vegetables, as well as various other foods, are dried commercially; pupil to prepare a price list of various factory products such as:

Cherries	Cauliflower
Cranberries	Corn, sweet
Huckleberries	Okra
Strawberries	Onions
Cabbage	Potatoes
Carrots	Spinach

ESSENTIALS IN THE DRYING PROCESS

1. *Circulation of air*: The greater the surface exposed, the quicker the process of evaporation and the safer. Recent experiments have shown that currents of dry air are better than heat for removing surplus water.

2. *Heat*.

3. *Cleanliness*: Guarding against dust and insects.

4. *Speed*: The quicker the process of drying, the less danger from bacteria, yeasts, and molds.

THREE PRINCIPAL AGENTS IN HOME DRYING*(Use singly or in any combination)*

1. *Air blast:* Place the food on shelves in a rack and dry before an electric fan; use of the fan is practical only in parts of the country where electric power is cheap.

2. *Sunshine:* This is satisfactory only in very dry climates, and in places free from soot and with plenty of space for trays.

3. *Artificial heat:* This is the agent usually employed in the average home. Conditions are best when currents of heated air pass over the product, as well as up through it.

Expose the food at first to gentle heat and gradually increase to a somewhat higher temperature; use a thermometer. Do not allow the air temperature to go above 140°–150° F., or 60°–65° C.; it is wise to keep it well below this point. Avoid scorching the food or injuring its flavor by too high a temperature. The time required varies; see time-table, page 13.

With artificial heat, the food may be dried in any of the following ways:

- a. Spread on trays in an oven—the warming oven or the baking oven with the door left ajar—or in a specially constructed oven or drier. In some cases the homemade driers are similar to the commercial driers. With fruits an excellent method is to dry them in the sun until the surface begins to wrinkle, then complete the process in the drier.
- b. Spread on trays on the back of the kitchen stove or on a radiator.
- c. Spread on trays or racks and suspend over a radiator or the kitchen range. A few trays bent out of coarse wire netting and fitted like removable shelves into a lath frame form a very good and easily constructed rack.
- d. Place in a cheesecloth bag and suspend in a warm, dry place—for instance, over the kitchen stove or in the open air; wind is helpful as a drying agent. This method is especially useful with herbs, such as celery leaves, thyme, sage, parsley, mint, and sweet marjoram. Tie the herbs in bunches, or place loosely in the bag and stir occasionally.
- e. String to form “necklaces” and suspend them over the kitchen stove, later in the attic. Various foods may be dried by this old-fashioned method, such as:

Apples, cored and quartered or sliced
Beans, string
Okra

Peppers
Quinces
Etc.

Note:

Instructor to plan work as follows:

- a. In June assign the pupils summer homework in drying foods by the various agents listed above.
- b. In the fall, upon return to school, prepare an exhibition of these dried foods.

TIME-TABLE FOR DRYING FRUITS AND VEGETABLES BY ARTIFICIAL HEAT*
(The time stated is approximate)

FRUIT OR VEGETABLE	BLANCHING TIME	DRYING TIME	TEMPERATURE (Gradually increasing)
	MINUTES	HOURS	DEGREES FAHRENHEIT
Apples.....		4-6	110-150
Apricots.....		4-6	110-150
Berries.....		4-5	110-140
Cherries.....		2-4	110-150
Peaches.....		4-6	110-150
Pears.....		4-6	110-150
Plums.....		4-6	110-150
Quinces.....		4-6	110-150
Asparagus.....	5-10	4-8	110-140
Beans, green string.....	6-10	2-3	110-145
Beans, lima (young).....	5-10	3-3½	110-145
Beans, wax.....	6-10	2-3	110-145
Beets.....	Until skin cracks	2½-3	110-150
Brussels sprouts.....	6	3-3½	110-145
Cabbage.....	10	3	110-145
Carrots.....	6	2½-3	110-150
Cauliflower.....	6	3-3½	110-145
Celery.....	3	3-4	110-140
Corn, sweet.....	5-10	3-4	110-145
Herbs.....	4-6	3	110-145
Leeks.....	5	2½-3	110-140
Okra.....	3	2-3	110-140
Onions.....	5	2½-3	110-140
Parsnips.....	6	2½-3	110-150
Peas, garden (mature).....	3-5	3-3½	110-145
Peas, sugar (young).....	6	3-3½	110-145
Peppers.....			110-140
Pumpkin.....	3	3-4	110-140
Rhubarb.....	3		110-145
Salsify, kohlrabi, and celeriac.....	6	2½-3	110-150
Spinach.....	4-6	3	110-145
Squash, summer.....	3	3-4	110-140
Swiss chard.....	3	3-4	110-140
Tomatoes.....	To loosen skin		110-145

* Adapted from time-table, page 11, *Home Drying Manual for Vegetables and Fruits*, published by the National Emergency Food Garden Commission.

Notes:

1. Compare dried foods with canned foods as to time required, also labor and storage-room.

2. Is artificial heat used in the commercial drying of fish, meats, milk, eggs, etc.? If so, secure data as to time and temperature.

DRYING FRUITS AND VEGETABLES IN THE HOME

Method:

1. Select perfectly fresh, sound foods, and those of good flavor; vegetables to be young and tender.

2. Clean the foods thoroughly.

3. As a general rule, remove the skins from fruits and vegetables, then cut into shreds or thin slices; $\frac{1}{8}$ "- $\frac{1}{4}$ " is a fair thickness for most vegetables.

Most fruits and vegetables are too large to dry quickly whole, and the skin needs to be broken or removed so as to permit evaporation. Root vegetables should be pared before being sliced; a machine is available for paring potatoes.

Use any of the following utensils for shredding and slicing:

Knife, sharp, long-bladed

Shears

Meat-grinder

Kraut-slicer, good for such large vegetables as cabbage and potatoes

Rotary hand slicer, useful with many foods

4. Blanch the vegetables; fruits are blanched only in a few rare instances. To blanch vegetables, place in a cheesecloth bag or a wire basket and plunge them into boiling water for a short time; time varies, according to the vegetable, from 3 to 10 minutes. (See time-table.) Spinach and other greens are blanched in steam.

5. Cold-dip the vegetable; that is, plunge it into cold water for an instant.

6. Drain well and remove surface moisture with a dry cloth or towel.

7. Spread in a thin layer on any of the following "trays":

Platters or granite plates (these are often good for berries and cherries)

Shallow trays

Sheets of paper or muslin (for sun drying)

Frame, made of heavy pasteboard, sections of boxes, etc.

Rustless mesh screening, held in place by a few laths

Etc.

8. Cover, as a means of cleanliness, with one of the following:

White mosquito netting

Coarse cheesecloth

Fine wire screening

9. Dry the food by artificial heat, sunshine, or air blast; stir or turn often so as to obtain a uniform product.

10. Pack the food when thoroughly dry; fruit should be leathery and pliable.

Use any of the following moisture-proof containers:

Tin cans with tight covers (these are probably the best containers)

Glass jars

Paraffin-paper cartons

Pasteboard boxes with tight covers

Strong paper bags

Small containers are desirable. Why?

Label the containers, and store in a place which is cool, dry, and well ventilated.

11. Test or "condition" the dried product; that is, pour it from one box to another once a day for the first 3 or 4 days after packing; this makes it uniform. If the product is too moist, return it to drier.

Notes:

1. One bulletin states that the blanching and cold-dipping of vegetables are not strictly essential.

2. Sweet corn is cut from the cob after blanching.

3. Cut carrots in fancy shapes, dry, and use as a soup garnish. Vegetables for soup mixtures—carrots, cabbage, onions, celery, potatoes, and okra—are dried separately and mixed as desired.

4. A good way to dry strawberries or cherries is to sprinkle them with sugar and dry in the oven, with the door ajar. Dried cherries, raspberries, and strawberries may be substituted for raisins in puddings and other dishes; dried huckleberries are a good substitute for currants.

5. To prepare raisins, dip bunches of Malaga grapes for an instant in boiling water, then spread on straw and dry in the sun.

6. Apples, pears, and quinces may be pared, cored, and cut into eighths, or cored and sliced in rings.

7. Do not let fruits stand long before drying, as they discolor quickly. If light-colored products are desired, dip the sliced fruits for 1 min. in cold water containing 2 t. salt to each qt. water.

8. For further suggestions as to specific vegetables and fruits, see any of the government bulletins.

Tomato Paste

(A special recipe for dried tomatoes)

Method:

1. Wash tomatoes and cut out the stem ends.

2. Slice, place a layer in a basket or granite colander, and sprinkle with a handful of salt; repeat, putting in layers of tomatoes and salt.

3. Set the basket or colander in the sink or over a pan or crock, and let stand over night, or until much water has been extracted and drained off.

4. In the morning cook the tomatoes 10–30 min., or until reduced to a very soft pulp; stir occasionally.

5. Press the pulp through a sieve by means of the hands or a spoon, leaving only the skins and seeds in the sieve; discard the skins and seeds.

6. Cook the pulp until as thick as a drop batter and until the spoon leaves a track as it is drawn through the batter; stir the mixture constantly toward the last.

7. Spread on platters, cover with cheesecloth, and dry for a few days in the sun or in a warming oven until as thick as butter.

8. Pack in an earthen crock; then to prevent molding cover first with a thin layer of olive oil and then with cheesecloth or oiled paper; place an earthen cover or a plate over the whole.

Notes:

1. If desired, various seasonings may be stirred into the paste before it is placed in the crock:

Paprika
Olive oil

Chopped red peppers
Etc.

If preferred, mix equal parts of tomatoes and chopped red peppers, and then follow steps 1-8; such a paste is especially good with macaroni.

2. It is often convenient to roll the paste into round flat cakes, rub each with olive oil then place in a crock and cover with cheesecloth. Remove one cake at a time from crock, as required for use.

3. If preferred, omit the final stage of drying. In other words, place the paste in air-tight glass jars at the end of step 6; omit the last two steps.

4. Tomato paste is very strong, and a little of it seasons a large quantity of food. Use as a seasoning in various dishes, such as the following:

Soups (such as tomato soup)

Sauces (such as tomato sauce for macaroni)

Various other dishes (such as those in the complete-dish series)

Dried Pumpkin

Method:

1. Cut pumpkin in halves or quarters and boil until tender.
2. Scoop out pulp, spread on trays, and dry in warming oven.

Note:

Two oz. of dried pumpkin are sufficient for one pie.

PRESERVATION BY MOIST HEAT—THE CANNING OF FOODS

To sterilize canned foods, it is necessary to kill all bacteria, yeasts, molds, and spores in them.

ONE-PERIOD COLD-PACK METHOD OF CANNING

This is the most up-to-date method of canning, and usually the quickest and the least work. It is successful with nearly all, if not all foods—meats, fish, vegetables, fruits, and soups. But such foods should be *boiled* before serving. (See important Note 2, page 24.)

One of the values of this cold-pack method lies in the fact that the delicate flavor of foods is retained. The time required varies according to the food and the temperature used. The hot dip (scalding or blanching) and the cold dip, the characteristic features of the cold-pack method, are not used as a rule in the hot-pack or open-kettle method of canning.

FOUR TYPES OF HOME-CANNING APPARATUS FOR USE WITH THE COLD-PACK METHOD

I. Hot-water bath outfit at 212° F., or 100° C.

This is the type that is used ordinarily in the home or school. It consists of a large utensil (for instance, a wash boiler or lard can) with a tight cover and a false bottom to permit circulation of water and to prevent breaking of cans.

II. Water-seal outfit.

This allows a temperature a little above 212° F., or 100° C.

III. Steam-pressure canner.

This type permits 5 lb. or more steam pressure, with a temperature ranging from 228° F., or 109° C., upward.

IV. Pressure cooker.

This permits 10 lb. or more steam pressure. It is usually made of aluminum, and is much used for general cooking, as with pot roasts and beans. Steam under 15 lb. pressure readily and rapidly destroys all bacteria and spores in canned vegetables and meat.

Notes:

1. The four types of apparatus outlined are arranged in sequence according to the temperature and the consequent time required. For example, the hot-water bath outfit makes use of the lowest temperature and hence requires the longest time. The pressure cooker makes use of the highest temperature and hence requires the least time.

2. Various appliances of each of these types are on the market; they are large or small according to whether they are to be used for commercial or for home purposes.

TIME-TABLE FOR SCALDING, BLANCHING, AND STERILIZING FOODS BY THE ONE-PERIOD COLD-PACK METHOD*

(Time given in minutes)

PRODUCTS BY GROUPS	SCALD OR BLANCH	HOT- WATER BATH OUTFIT AT 212° F.	WATER- SEAL OUTFIT AT 214° F.	STEAM PRESSURE, 5 TO 10 LB.	PRESSURE COOKER, 10 TO 15 LB.
SPECIAL VEGETABLES†					
Corn, sweet.....	5	180	120	90	60
Peppers, sweet.....	5	90	75	60	40
Pumpkin.....	3	120	90	60	40
Tomatoes.....	1½	22	18	15	10
POD VEGETABLES AND OTHER GREEN PRODUCTS†					
Beans, wax.....	5-10	120	90	60	40
Brussels sprouts.....	5-10	120	90	60	40
Cabbage.....	5-10	120	90	60	40
Cauliflower.....	3	60	40	30	20
Okra.....	5-10	120	90	60	40
ROOT AND TUBER VEGETABLES					
Beets.....	5	90	80	60	40
Carrots.....	5	90	80	60	40
Parsnips.....	5	90	80	60	40
Potatoes, sweet.....	5	90	80	60	40
Salsify.....	5	90	80	60	40
Turnips.....	5	90	80	60	40
Other roots and tubers.....	5	90	80	60	40
COMBINATIONS AND SOUP VEGETABLES†					
Lima beans.....	5-10	180	120	60	40
Peas.....	5-10	180	120	60	40
Vegetable combinations.....	5-10	120	120	60	45
GREENS†					
Asparagus.....	15	120	90	60	40
Beet tops.....	15	120	90	60	40
Cress, upland.....	15	120	90	60	40
Dandelion, cultivated.....	15	120	90	60	40
Endive, French.....	15	120	90	60	40
Kale.....	15	120	90	60	40
Spinach.....	15	120	90	60	40
Swiss chard.....	15	120	90	60	40
SOFT FRUITS AND BERRIES					
Apricots.....	1-2	16	12	10	5
Blackberries.....	...	16	12	10	5
Cherries.....	...	16	12	10	5
Citrous fruits.....	1-2	12	8	6	4
Currants.....	...	16	12	10	5
Figs.....	1-2	16	12	10	5
Gooseberries.....	1-2	16	12	10	5
Grapes.....	...	16	12	10	5
Huckleberries.....	...	16	12	10	5
Peaches.....	1-2	16	12	10	5
Plums.....	...	16	12	10	5
Raspberries.....	...	16	12	10	5
Strawberries.....	...	16	12	10	5
Fruits without sugar sirup.....	...	30	20	12	10

* Compiled from the time-table, pp. 29-31, *Farmers' Bulletin 839*, U. S. Dept. Agri., "Home Canning by the One-Period Cold-Pack Method," by O. H. Benson.

† The author of *Food Economy* recommends that southerners make a careful study of *Food Economy*, page 24.

**TIME-TABLE FOR SCALDING, BLANCHING, AND STERILIZING FOODS BY THE
ONE-PERIOD COLD-PACK METHOD—Continued**

PRODUCTS BY GROUPS	SCALD OR BLANCH	HOT- WATER- BATH OUTFIT AT 212° F.	WATER- SEAL OUTFIT AT 214° F.	STEAM PRESSURE, 5 TO 10 LB.	PRESSURE COOKER, 10 TO 15 LB.
HARD FRUITS					
Apples.....	1½	20	12	8	6
Pears.....	1½	20	12	8	6
Quinces.....	1½	20	12	8	6
Apple sirup.....	....	15	10	8	5
Fruit juices.....	....	15	10	8	5
Preserves, after preparing and filling.....	....	20	15	10	....
UNCOOKED MEATS					
Beef.....	....	180	180	120	60
Corned beef.....	....	180	180	120	60
Poultry and game.....	....	180	180	120	60
PREPARED YOUNG MEATS					
Baked meats.....	....	90	60	40	30
Fried meats.....	....	90	60	40	30
Roast meats.....	....	90	60	40	30
Stewed meats.....	....	90	60	40	30
Spring fries.....	....	90	60	40	30
FISH					
Fish (vertebrate).....	5	180	160	120	90
Shellfish.....	5	180	160	120	90
SOUPS					
Cream of tomato soup.....	....	30	20	18	10
All other soup combinations and soup stock.....	....	90	75	60	45

Notes:

1. All vegetables, meats, and other food products used in the soup combinations should be prepared and treated prior to sterilization in the same way as when canned separately, and then mixed, packed, and thoroughly sterilized.
2. The time schedule is based upon the one-quart pack and upon fresh products at altitudes up to 1,000 feet. For higher altitudes increase the time 10 per cent for each additional 500 feet.
3. When processing fruits in steam-pressure canners, do not use over 5 lb. steam pressure; when processing vegetables, do not use over 15 lb. pressure.

STEPS IN ONE-PERIOD COLD-PACK METHOD OF CANNING

To temper cans, place them in the canner when the water is put on to heat, and let stand in the water 5–15 min. after it begins to boil; if preferred, temper the cans in some other utensil, such as a dishpan.

1. Select sound products free from injury and disease. Fruits and vegetables should be freshly picked.
2. Clean thoroughly, and grade for size, color, and degree of ripeness.
3. Scald or blanch fruits or vegetables the length of time specified in time-table. All greens and other vegetables are blanched, but certain soft fruits are neither scalded nor blanched. Blanching (a longer process than scalding) consists

in cooking the food for a short time in boiling water or steam. All greens are blanched in steam.

When products are plunged into boiling water, the water will stop boiling; do not count time until the water again begins to boil or "jump." The products may be placed in a frying or other wire basket, or in a piece of cheesecloth (about one yard square) the alternate corners of which are tied to form handles.

4. Dip in cold water for about 30 sec. only. (Cold-dipping is omitted in the case of certain soft fruits.)

5. Prepare for packing in cans. (For special directions, see government bulletins; for example, *Farmers' Bulletin 839*, U. S. Dept. Agri.)

6. Pack quickly in hot, tempered cans; pack products of the same size and degree of ripeness in the same can. Pack all products as tight as possible; see exceptions in Note 1, page 21.

7. Add boiling liquid—water, sirup, or brine—as indicated. Since tomatoes are 94 per cent water, it is well to use tomato juice instead of water in the pack. All fruits can be canned successfully in water as well as in sirup. Do not fill cans full of liquid or solid; leave space of $\frac{3}{8}$ – $\frac{1}{2}$ of an inch at top for expansion and vacuum, depending upon nature of product.

8. Add 1 t. salt to each quart of vegetables.

9. Seal the cans as follows:

- a. *Glass-top can*: Place rubber and top in position and partially seal, tightening the side wire but not the top wire.
- b. *Screw-top can*, such as Mason: Place rubber and top in position, then screw down top until it catches but is not tight. Do not try to force the top. A good way is to screw the cover tight, then turn back one quarter circle. Avoid sealing tight either a Mason or a glass-top can.
- c. *Self-sealing can*, such as Economy: Seal tight, placing the top and clamp spring in position as tight as possible. *Caution*: Do not boil the cover beforehand in water.
- d. *Tin can*: Cap and tip.

10. Sterilize in the canning outfit for the length of time specified in the table.

These precautions apply particularly to work with the hot-water bath outfit:

- a. Support the cans on a perforated platform to permit the circulation of water under and around the jars.
- b. Be sure that all cans are covered by at least an inch of water; as a rule this necessitates filling the canner $\frac{3}{4}$ – $\frac{1}{2}$ full of water. The cans are almost sure to leak if they are not kept covered with water. Why?
- c. Put canner cover on tight.
- d. Do not begin to count time until water is boiling (jumping).

11. Remove the cans from the outfit; tighten the covers at once if using types of cans which require tightening; immediate sealing of the cans is essential.

12. Invert to cool and to test the joints. (Do not invert or tip self-sealing cans.)

If rubber or top is defective, replace with a new one at once, return can to canner, and sterilize 5 min. longer.

13. Label cans, and store in a cool place; wrap glass cans in paper to prevent bleaching.

Notes:

1. *Breakage.* Avoid the breakage of glass cans by observing the following precautions:
 - a. Do not fill any can quite full. The following vegetables swell greatly when heated in water, hence should not be packed very tight in the cans: corn, pumpkin, peas, lima beans, and sweet potatoes. Why do they expand more than most other foods?
 - b. Do not place cold cans in hot water, or vice versa. Perform steps 6-10 of the canning method with speed, in order that the cans may not cool. Place the cans in the sterilizer just as soon as they are filled with hot liquid.
 - c. Avoid wire clamps that are too tight, or the glass top may crack during sterilization or when the side wire is forced down.
 - d. Avoid having too much water in the steam canner; the water should not come above the platform.
 - e. Do not allow drafts to strike the cans when they are removed from sterilizer.

2. *Cans.* All good cans have wide necks.

Good glass-topped cans have tight clamps.

The covers of Mason jars should display no nicks.

All types of cans, including the Economy (a self-sealer), will endure any temperature, even that of the cooker under 15 lb. pressure.

Tin cans are practical in the home and school; even sixth-graders can manage them.

An average price for one empty quart can is \$0.05-\$0.07. Each tin can is usable but once, hence glass cans are more economical for use by the average housekeeper.

Note the method for the use of the tin can:

- a. Fill can, solder on cap, exhaust the air, then close the tiny hole in the cap.
- b. Cook the food in the can.

3. *Rubbers.* Good rubbers are essential. It is poor economy to use last year's rubbers or to buy a cheap grade; the best are comparatively inexpensive.

A good rubber—one that is soft and elastic, not hard—does not snap when treated as follows:

- a. Squeeze tightly in hand.
- b. Bend back on itself, first one way and then the other, as in breaking wire.

Rubbers should run eleven to the inch; otherwise they are too thin. Good rubbers stand 10 lb. steam pressure, hence rubber should be placed on can at the start and steamed as long as the food.

4. *Clamps or lifting forks.* It is necessary to have clamps or lifting forks for placing the hot cans in the sterilizer and for removing them. In addition to various patent clamps on the market, many homemade devices are possible, such as the following:

- a. Buttonhook, useful with glass-topped jars; catch the wire of the jar with the buttonhook.
- b. Skimmer or pancake turner; bend the handle at right angles to the main part of the utensil.

5. *Sirups.* There are many rules for sirups for use in canning; the richness of the sirup is a matter of individual taste.

A typical recipe for use in canning is 3 c. water to 2 c. sugar. It is sometimes asserted that if the sugar is put on to cook in cold water the sirup will not crystallize.

SIRUP	APPROXIMATE TIME FOR BOILING	DESCRIPTION OF SIRUP
Thin	5 min.	Sugar is all dissolved, but the sirup is not sticky.
Medium	10 min.	Sirup has begun to thicken and is sticky when cooled on the finger or a spoon.
Thick	15 min.	Sirup piles up on the edge of spoon when one attempts to pour it.
Very thick	20 min.	Sirup is hard to pour from the spoon, but has not gone to sugar.

6. *Class recipes for fruit.* Use either the cold-pack or the hot-pack method.

1 PT. JAR FRUIT, CANNED WITH A THIN SIRUP

$\frac{1}{2}$ c. sugar }
1 c. water } Boil together 2 min.
1 doz. plums or 3 peaches

1 PT. JAR FRUIT, CANNED WITH A RICHER SIRUP

$\frac{3}{4}$ -1 c. sugar }
1 c. water } Boil to form a thick sirup.
1 doz. plums or 3 peaches

Unfermented Grape Juice

(Steps 6, 7, 8, and 9 bear a close resemblance to the cold-pack method of canning)

Ingredients:

2 qt. stemmed grapes (such as Concord grapes); pick over and wash before stemming

1 qt. cold water

1-4 tb. sugar to each pt. juice obtained (usually 2-3 tb.)

Method:

1. Crush grapes with a wooden mallet or spoon, then add water.

2. Using a temperature considerably below the boiling point, cook the grapes $\frac{1}{2}$ hr., or until the seeds separate from the pulp. The temperature should not exceed 165°-176° F., or 74°-80° C.; by no means 200° F., or 150° C. To secure this temperature, use a double boiler or a *low* direct flame; the double-boiler method is probably the better.

3. Drain over night in a jelly bag made of flannel or cheesecloth. Note the sediment which forms in the bowl of juice after standing.

4. Pour off the clear top juice, and discard sediment, or use it in grape butter.

5. Add the sugar, and heat in an acid-proof kettle up to 110° F., or 43° C.; stir to dissolve the sugar.

6. Using a glass or agate funnel, strain juice into hot sterilized bottles; fill only to within 1" of the top, since liquids expand when heated.

7. Place a new cork loosely in each bottle, then tie a small circle of cloth over the cork to keep it from blowing out later. The corks should have been treated as follows: soak $\frac{1}{2}$ hr. in 1 qt. warm water containing 1 t. soda, then dip into boiling water just before inserting in the bottles.

8. Set bottles (on a false bottom) in boiling water level with the juice, cover tight, and heat 40 min. at 165° F., or 74° C.

9. Remove bottles and immediately drive the corks in tight.

10. Place neck of each bottle on edge of table and with a sharp knife cut cork off even with the top of bottle, then turn the bottle upside down and dip 1" of neck into melted wax or paraffin. Store in a cool, dark, dry place.

Notes:

1. Use this method in preserving other fruit juices.
2. With this process hot-water heat is used so as to insure a low temperature. Fruit juices as a rule will not stand so much cooking as fruits nor so high a temperature during sterilization without destroying the natural fruit flavor.
3. Fruit cans may be substituted for bottles as containers for fruit juices.
4. With some fruits it is possible to substitute the following cold process, which is sometimes more convenient, for the hot process in steps 1, 2, and 3:
 - a. Crush the fruit by means of a potato-masher, food-chopper, or fruit-juice press. (Use a cider mill in dealing with large quantities.)
 - b. Place in a bag and press or twist so as to extract the juice.
5. A good plan for a class exercise is as follows, using 1½-2 c. stemmed Concord grapes:
 - a. Prepare grape juice from the first extraction; fill a small (4-6 oz.) bottle.
 - b. Prepare grape jelly or butter from the second and third extractions.

Vegetable Seasoning Mixture

(Hot-pack or open-kettle method of canning)

Ingredients: (The large recipe yields about 8 pt.; the class recipe half fills a jelly jar)

½ c.	8 lb. ripe tomatoes, scalded, peeled, and sliced
1 h. tb.	4-5 medium carrots, cut in ¼" dice or ground in food-grinder
	Vegetables, chopped or ground:
1 t.	½ bunch parsley
1 h. tb.	1 qt. onions
1 h. tb.	1 small head cabbage
1 tb.	3 stalks celery
1 tb. corn	4 ears green corn, cooked 10 min. in simmering water, then cut from the cob; scrape cob
2 peppercorns	1 tb. (scant) peppercorns
¼ t.	½ c. salt
½-1 c. water	

Method:

1. Mix all the ingredients together, cover, and simmer 2 hr.; stir occasionally.
2. Seal air-tight in hot sterilized glass cans; it is well to dip the tops of cans in paraffin after sealing.

Notes:

1. Measure the ingredients for the class recipe after grinding or chopping.
2. Use the mixture for seasoning any stock soup, such as that made from soup cubes; 1 t. of the mixture will season 1 c. stock. The mixture may also be used as a seasoning for sauces, hash, stews, etc.
3. By the substitution of canned tomatoes and corn for the fresh vegetables, this mixture can be prepared at any season of the year.
4. If preferred, substitute the cold-pack for the hot-pack method.

SYNOPSIS OF CANNING

A. The Two Methods of Canning Foods

I. *Cold-pack or jar method.*

This consists in cooking the food in the jars or cans.

The one-period cold pack is the chief jar method recommended to-day by United States government authorities. Intermittent sterilization, or sterilization at 212° F., or 100° C., for a short time (45–60 min.) on each of three successive days, has been used to some extent; but it is needless work, at least for most foods.

There seems to be some difference of opinion among authorities as to the advisability of using the one-period cold-pack method with certain vegetables, that is, when the hot-water bath outfit is used. At least two bulletins¹ recommend the intermittent method, and not the one-period cold pack, for corn, lima beans, and peas. The intermittent method is sometimes recommended also for greens, asparagus, string beans, okra, and concentrated soup mixtures. Southern housekeepers using the hot-water canner in work with corn, peas, etc., are advised to follow the two bulletins named in the footnote. *Farmers' Bulletin 853* was written especially for the southern states.

Observe the following precautions concerning the one-period cold-pack method of canning and the use of its products:

1. Follow the canning directions very carefully, or the food may spoil; food spoilage means an economic loss.

2. Avoid any possible danger of food poisoning by observing these rules:

- a. Discard the food if it shows any signs of decay, such as a slimy appearance or a disagreeable odor.
- b. Do not serve home-canned vegetables cold, as in salads; this applies particularly to corn, lima or string beans, and peas. Boil the foods for two minutes, at least, before serving; boiling destroys any toxins which may have been formed in the cans.

II. *Hot-pack or open-kettle method.*

Generally speaking, this is the old-fashioned method of canning. It is now much less used because the shape of food is likely to be lost, and because incomplete sterilization is likely to result except in the case of certain acid foods, such as tomatoes and fruits.

The hot-pack method will doubtless always be used to a certain extent by the housekeeper, since it is often a convenience, especially in dealing with a small quantity of food, or with recipes in which evaporation is an important factor.

B. Two Groups of Foods for Canning

1. *Acid foods*, such as tomatoes and fruits. (Acid is antiseptic, hence foods of this group are easier to preserve.)

Preserve by a one-period sterilization at 212° F., or 100° C.; use either the cold-pack or the hot-pack method.

2. *Non-acid foods*, such as meats and most vegetables.

Preserve by the cold-pack method; the hot-pack method never should be used.

¹*Circular No. A-81*, by Miss Mary E. Creswell and Miss Ola Powell, of the States Relations Service, U. S. Dept. Agri.; *Farmers' Bulletin 853*, U. S. Dept. of Agri., "Home Canning of Fruits and Vegetables," by Creswell and Powell.

PRESERVATION OF FOODS BY ACID OR SALT, IN SOME CASES WITH MOIST HEAT, SUGAR, AND SPICE

CANNING PICKLES BY THE HOT-PACK OR OPEN-KETTLE METHOD

Sweet Pickles

Ingredients:

(The class recipe fills a one-pint jar)

3 or 4 peaches or pears	Fruit or vegetable: use one kind or any suitable combination of the following:
	Apples, crab
	Apples, sweet
	Apricots, fresh
	Cantaloupe rind
	Carrot, young
	Chayote (see Note 2)
	Citron melon
	Cucumbers, ripe
	(deep orange)
	Thin sirup, formed by boiling together the following:
1 c. vinegar + {	6 c. vinegar
3/4 c. water }	
1 c.	4 c. sugar — one of the following:
	Dark brown (preferable)
	Light brown
	White (least desirable)
	Spice to taste:
3 "	Stick cinnamon
small piece	Whole mace
20	Whole cloves

Method:

1. Prepare the fruit or vegetable as follows:
 - a. Leave whole or cut in halves, quarters, or slices. Pare or not, as preferred.
 - b. If very hard, steam until almost tender. Steam dried figs until they are plump.
 - c. Dip peaches in boiling water, drain, and remove "fur" by rubbing with a soft cloth. Stick four or five cloves into each peach or pear.
2. Add the fruit or vegetable to the sirup, boil until tender and "clear," then remove from sirup and place in clean hot glass jars.
3. Boil sirup until very thick, pour over pickles so as to fill the jars, then seal.
4. Wrap in paper to prevent bleaching, and store.

Notes:

1. Steps 2 and 3 are the hot-pack or open-kettle method; if preferred, use the cold-pack method.

2. The chayote is a pear-shaped vegetable. Slice the chayotes, cure 3-5 days in brine, then freshen and proceed in somewhat the same way as for other sweet pickles.¹

3. Spiced fruits are a form of sweet pickle very similar to the recipe on page 25; as a rule they are made from the smaller and softer fruits, such as the following:

Cherries

Grapes

Currants

Plums (such as damson)

Gooseberries

Etc.

4. Avoid aluminum or other metal ware in pickling or other work with acids.

5. Note that a "relish" of some kind, such as pickles, olives, celery, or jelly, is an important part of the average dinner or luncheon.

Canned Sweet Peppers

(Method similar to that for sweet pickles)

Method:

1. Wash large sweet peppers, red, yellow, or green; use singly, or in any combination of color.

2. Cut a slice from each stem-end and remove seeds.

3. Cutting around and around with the scissors, cut each pepper into long strips $\frac{1}{4}$ "- $\frac{1}{2}$ " wide; keep the strips as long as desired.

4. Cover with boiling water and let stand 3 min.

5. Drain, and plunge into very cold water, preferably ice water.

6. Drain, and pack solid in pint jars.

7. To every qt. vinegar add 2 c. sugar, bring mixture to boiling point, and boil 15 min.

8. Fill jars to overflowing with the sirup, seal, and keep in a cool place.

Notes:

1. These peppers keep well and, chopped or not, are useful in various ways; for example:

As garnish for meats and other foods

In salads and entrées

In filling for cream cheese and other sandwiches

Sweet peppers for use in salads are often more desirable if canned whole.

2. Can hot peppers of any color in the same way.

3. It is well to do all cutting of even the sweet peppers under water.

4. It is asserted, but not proved, that the more points the milder—that green peppers with four points are sweet, that those with fewer than four points are hot.

5. A class recipe for a pint jar of peppers is as follows:

3-4 peppers

$\frac{1}{3}$ - $\frac{1}{2}$ c. sugar

1 c. vinegar

$\frac{1}{2}$ c. water

¹ See pp. 223-224, *Successful Canning and Preserving*, by Miss Ola Powell.

Mixed Mustard Pickles**Ingredients:***(The class recipe just fills one pint jar)*

1 c.	1½ qt. cucumbers, 1"-2" long
½ c.	1 qt. small onions
to cover	Brine (¾ c. coarse salt to 1 qt. water) for soaking cucumbers and onions
¼ c.	1 qt. green tomatoes, sliced
⅓ c.	1½ heads cauliflower divided into "flowers"
1 slice	3 red peppers, shredded
a mixture of ¾ c. vinegar and ½ c. water; use 2 tb. of mix- ture for the paste	1½ qt. strong cider vinegar
2 tb.	1 c. light brown sugar
1½ tb.	¾ c. flour
1½ t.	5 tb. dry mustard
to color	Turmeric powder (for coloring pickles a light yellow)

Method:

1. Prepare vegetables in the following manner:
 - a. Wash cucumbers, and let stand over night in cold brine to cover.
 - b. Peel onions under cold water, cover with boiling brine, and let stand in a cool place over night.
 - c. Pour boiling water over sliced tomatoes and let stand ½ hr.
 - d. Steam or boil the cauliflower 10 min.
2. Add all the vegetables except the tomatoes to the vinegar, cover, and boil 10 min., or until almost tender.
3. Add tomatoes, cover, and boil 5 min. longer, or until tomatoes are tender; avoid cooking the tomatoes to a pulp.
4. Drain off vinegar, and pack vegetables in hot jars.
5. Mix sugar, flour, mustard, and a little cold vinegar to form a smooth paste.
6. Add paste to hot vinegar and boil 2-3 min., or until as thick as thick cream.
7. Mix turmeric powder with enough cold water to make a thin paste.
8. Add turmeric paste to vinegar mixture, pour over vegetables, and seal.

Note:

Measure the vegetables for the class recipe after preparing the vegetables.

Pepper Relish**Method:**

1. Chop very fine 1 doz. each of onions, green peppers, and red peppers.
2. Mix well, cover with boiling water, let stand 5 min., then drain.
3. Add 3 tb. salt, 2 c. sugar, and 2 c. vinegar.
4. Boil 5 min., and can in sterile jars.

SYNOPSIS OF PRESERVATION OF FOODS BY ACID

Five Methods of Pickling

I. Preservation by vinegar and heat.

This group includes many recipes for pickles, such as sweet pickles and mustard pickles. In some recipes spice, brine, and sugar are additional preserving agents. The hot-pack method of canning is customary with such pickles, but the cold-pack method may be used, and doubtless will be used much in the future.

II. Preservation by vinegar and spice: uncooked chili sauce and various other raw chopped relishes.

In oil pickles, which also belong to this group, brine and oil are additional preserving agents; oil is a preservative in that it prevents the entrance of air.

III. Preservation by vinegar.

The following is a recipe for preserving green peppers; grated horseradish can also be preserved by vinegar.

Method:

1. Wash sweet green peppers; do not remove stems or seeds.
2. Place in a crock and cover with *cold* vinegar.

Note:

The peppers will keep for months; slice and serve in salads.

*IV. Preservation by natural fruit acids.***Method:**

1. Wash fruit carefully. Cut rhubarb into 2"-3" lengths, if desired.
2. Place in a strainer and rinse with boiling water.
3. Drain, pack in jars, and let cold water from the faucet run into jars until the air bubbles are all expelled.
4. After filling the jars with cold water, add rubber and cover, and seal air-tight.

Notes:

1. The foregoing is a practical method only with products having a very high percentage of acid, such as rhubarb, cranberries, and green gooseberries; blueberries and lemons also are sometimes preserved by this method. Lemons will keep for one month in an uncovered crock if the water is frequently changed.

2. It is safer to keep the skins of rhubarb and berries intact.

V. Preservation by acid from fermentation (salt also a preservative in this process).

Preserving by fermentation has been practiced for centuries. In Europe many fermented substances are common articles of food. It is an inexpensive and reliable method of preservation, and one too little utilized in some countries; in the United States, pickles and sauerkraut are the only common products of the

fermented type. Following are some of the vegetables, etc., which can be fermented and kept indefinitely:

Beans, string	Chayotes
Beets	Cucumbers (dill pickles result)
Cabbage (sauerkraut results)	Onions
Cauliflower	Watermelon

The processes used in fermenting the various vegetables are similar.

The two methods, (a) fermentation and (b) salting (as given below), possess the following advantages:

- a. No sugar or fuel is required.
- b. Unusual containers, such as crocks and kegs, can be used; fruit cans are not required.

PRESERVATION OF FOODS BY SALT

Salting is an economical and safe method of preservation, and one too little practiced by most peoples. Salted vegetables are prepared to some extent in this country, but the method of salting is more commonly applied to meat and fish. A few recipes for the salting of vegetables follow.

Salted Greens

Method:

1. Wash, drain, and weigh any kind of greens, such as one of the following varieties:

Beet tops	Kale
Dandelion leaves	Spinach

2. Weigh out a quantity of fine salt equal to one-fourth of the weight of the greens.

3. Pack the greens in a clean crock or other container in layers about 1" thick, and sprinkle each layer heavily with salt.

4. Cover with a clean cloth and a round board, add a weight, and set aside.

Notes:

1. Parsley and string beans can be salted by this method.
2. When ready to use them, soak the vegetables several hours in fresh water, then cook in the same way as fresh vegetables.
3. Discuss the question of a possible loss of food value by this method of preserving vegetables.

Salted Celery (Canned)

Method:

1. Boil salt and water to make a brine strong enough to float an egg.
2. Cut celery in 2"-3" lengths, and pack in glass cans.
3. Cover celery with cold brine, and seal. (Do not submit the celery to any cooking.)

Salted Corn (Canned)**Ingredients:**

9 c. green corn, secured as follows:

- a. Place fresh corn-on-the-cob in boiling water to cover, and boil 3 min. so as to set the juice or milk of the corn.
- b. Cut from the cob, then scrape cob.

1 c. salt

$\frac{1}{4}$ c. sugar

$\frac{1}{2}$ c. water

Method:

Mix all the ingredients, bring to the boiling point, and can.

Notes:

1. The method is an example of hot-pack canning.
2. Moist heat, as well as salt, is a preserving agent in this method.
3. Perfect jars and covers and new rubbers are essential.
4. When the jars are opened, freshen the corn by soaking it 4-12 hr. in cold water to cover; change the water two or three times. The length of time for soaking depends upon the kind of recipe in which the corn is to be used.

PRESERVATION OF FOODS BY A LARGE QUANTITY OF SUGAR, MOIST HEAT, AND IN SOME CASES SPICE

MARMALADES PREPARED BY THE HOT-PACK OR OPEN-KETTLE METHOD

I. Two types of marmalades.

1. Marmalade prepared by the three following methods from but one variety of fruit:

- a. Fruit cut in small cubes or slices.
 - b. Fruit mashed and skins and seeds removed; mixture called fruit butter.
 - c. Fruit mashed and skins and seeds retained; mixture called jam.
- This may be cooked into a soft or stiff butter, as preferred.

Fruit butters and jams are occasionally made from a combination of fruits.

2. Marmalade prepared from a combination of two or more varieties of fruit, with the addition of nuts or spice if desired; this is termed conserve. The fruit is either cut in small cubes or slices or chopped. Nuts, when used, should be added 5 min. before the conserve is removed from the fire. A great number of conserves can be prepared.

II. Two possible methods for cooking all marmalades.

METHOD	ADVANTAGES	DISADVANTAGES
1. <i>Quick method</i> : ¹ Cook very rapidly over a high flame; this is the more approved method.	Best flavor retained. Bright color retained.	Constant care is essential, steady stirring usually being required.
2. <i>Slow method</i> : Submit to long, slow cooking; a fireless cooker is sometimes used.	Constant care not required at first. As a rule, it is necessary to stir almost constantly after the sugar is added. Why?	Dark color. (Some persons consider a dark rich color an advantage.)

III. Miscellaneous suggestions for marmalades.

1. All marmalades are made in the same general way.
2. The usual rule is to use $\frac{1}{2}$ – $\frac{3}{4}$ lb. sugar to 1 lb. fruit.
3. Cook all types of marmalade to the jelly stage; see jelly tests, page 38, step 8. The best marmalades have a jelly-like appearance after standing in jars, thus showing the presence of pectin in the fruit used. (See definition of pectin, page 35.) Citrous-fruit mixtures make very firm jelly if the white skin is retained.

¹ Recommended by Ola Powell, *Successful Canning and Preserving*, page 163.

4. When done, pour while still hot into clean hot jelly jars, and cover with paraffin when cold; sterilization of the empty jars is not essential, especially with marmalades prepared with the maximum amount of sugar.

5. Marmalades are served in various ways, such as a sandwich filling or on toast, or with griddle cakes. Marmalades are often economical as a partial substitute for butter.

6. If a sprinkling of salt is added to the fruit, much less sugar is required.

IV. Economical marmalades.

Fruit butter and jam are especially economical forms of marmalade. Why?

The following kinds of marmalade may be made:

Beet	Orange (use all the rind)
Grape	Tomato, red or yellow
Carrot and orange	Pumpkin
Carrot and sweet potato, equal parts	Etc.

Pupil to estimate cost per glass.

Fruit Butter

Ingredients:

3 c. fruit pulp (see Note 2)

2 c. sugar; white usually used

Flavorings to taste:

Ginger root (good with apples)

Lemon juice and rind

Spice, ground

Water, little or none; use only enough to keep the mixture from scorching

Method:

Use either slow method or quick method, as preferred. If using the slow method, simmer all the ingredients together 1-3 hr., stirring often with a wooden spoon, until the following tests hold true:

a. Mixture is as thick as a very stiff drop batter.

b. A few drops stiffen quickly when cooled upon a plate.

c. Mixture is waxy and "transparent."

During the latter part of the cooking, when using the slow method, it is well to place an asbestos mat under the saucepan and to stir constantly.

Notes:

1. When cold, the mixture should be nearly of the consistency of dairy butter, but not quite so firm.

2. Secure fruit pulp by rubbing cooked fruit through a sieve to remove the skins and seeds; prepare the cooked fruit from the following, used singly or in any combination:

FRESH OR DRIED FRUITS		FRESH FRUITS	DRIED FRUITS
Apples, such as crab	Pears	Grapes	Dates
Apricots	Plums	Guava	Figs
Cranberries	Quinces	Lemon	Raisins
Peaches	Etc.	Etc.	Etc.

3. Fruit butter is especially economical if the following are utilized:

Pulp left from jelly making

Soft and somewhat imperfect fruits

Odds and ends of left-over fruit, fresh or cooked, such as apple sauce

4. "Fruit paste," a wholesome confection, is made in much the same manner as fruit butter; use 1 lb. powdered sugar to 1 lb. fruit pulp.

Carrot-Orange Conserve

Ingredients:

3 c. raw carrots	} see Note 1
2 large oranges	
1 large lemon	
3 c. sugar	
½ c. water	
¼-1 c. nuts, chopped (these may be omitted)	

Method:

Use either slow method or quick method of cooking. If using the slow method, mix all the ingredients and simmer 1½-2 hr., according to the age of the carrots; stir constantly toward the last.

Notes:

1. Treat carrots and fruits as follows, using a fine blade of the food-grinder for all grinding:

a. Carrots: Measure after washing, scraping, and grinding.

b. Oranges and lemons: Grind the entire rind and pulp, but reject the seeds.

Cut the fruit pulp in slices or cubes, if preferred.

Young carrots are preferable to old ones.

2. This recipe makes 3-3½ c. of conserve.

3. A good conserve results if apples are substituted for the carrots.

4. If oranges, grapefruit, and other citrous fruits are used in any quantity for conserves, salads, etc., much time is saved by peeling them in the following manner:

a. Scald the fruit 3-5 min. in steam or boiling water.

b. Peel the fruit; the white skin is easily removed with the rest of the rind.

Tomato-Raisin Conserve

Ingredients:

(The class recipe half fills one jelly glass)

1 small tomato	½ pk. fresh ripe tomatoes, scalded and sliced
½ medium apple	4 tart apples, chopped
½ slice	4 lemons cut in ¼" cubes
8 raisins	1 lb. raisins, chopped
4 tb.	4 lb. granulated sugar
1"	6 four-inch sticks of cinnamon
7 cloves	1 t. whole cloves
1 small piece	Ginger-root
¼ c. water	

Method:

1. Tie the cinnamon, cloves, and ginger-root in a bag.
2. Mix all the ingredients except the sugar and boil until almost as thick as drop batter.
3. Add the sugar, and boil 10-15 min., or until the jelly stage is reached and the spoon leaves a track behind it.
4. Remove the bag of spices before sealing the can.

Notes:

1. Note that in this recipe, as well as in orange-plum conserve, the quick method is stated in preference to the slow method.
2. By the use of 4 qt. canned tomatoes instead of the fresh tomatoes, the conserve can be made in the winter time.

V. Suggested combinations for conserves.

These conserves are, on the whole, more expensive than those given in section IV:

Apple (sweet) and lemon or quince	Orange, grapefruit, and lemon
Apple and guava	Orange and apple or kumquat
Apricot and loganberry or pineapple	Orange, lemon, and prune or plum
Barberry and spice (good with meats)	Peach and blackberry
Blackcap and cherry	Peach, lemon, and orange or currant

Orange-Plum Conserve¹**Ingredients:**

(The class recipe fills one jelly jar)

6 blue plums	6 lb. blue or other plums measured after plums are halved and pits removed
6 meats	"Meats" of plum pits, chopped
½ c.	4 lb. granulated sugar
1 h. tb.	2 lb. seeded raisins, chopped
4 meats	½ lb. English walnut or pecan meats, chopped
¼ orange	Juice and pulp of one orange
skin of ¼ orange	Skins of four oranges, chopped and parboiled 15-20 min.
½ c.	Just enough water to keep mixture from scorching

Method:

1. Swell the raisins by soaking them 1-2 min. in water just below boiling point.
2. Drain raisins, mix with all other ingredients except the sugar and nuts, and boil 20 min.
3. Add sugar and nuts and, stirring often, boil 5-10 min., or until the spoon leaves a track behind it and the liquid portion responds to the jelly tests. Avoid cooking the plums to a pulp; keep in halves as nearly as possible.

Notes:

1. Fruit that is overripe should not be used.
2. The skins of the plums enrich the color of the conserve.

¹ Contributed by Letitia Snively.

Preserved Strawberries*(Cold-process)***Method:**

1. Cut strawberries in halves or mash to a fine or coarse pulp.
2. Mix thoroughly with an equal weight of sugar, then let stand 24 hr. or a little longer; the sugar should be completely dissolved. Stir three or four times during the time allowed.
3. Seal air-tight in sterilized jars and keep in a cool place.

Notes:

1. Blackberries, peaches, or any other fruit that can be mashed to a pulp while in the raw state may be substituted for the strawberries. All fruits preserved by this method are especially good for use in shortcake.
2. This recipe is not a marmalade, but is closely related to marmalade.

JELLIES**Jelly Fruits Grouped According to Richness in Pectin and Acid**

The two essentials in jelly-making are pectin and acid. These must always be present. Pectin is the substance in fruits and vegetables which gives them their jelly-forming properties; its presence is important in marmalades as well as in jellies.

Some fruits have these two essentials in sufficient quantities, and they are classed as perfect or ideal jelly fruits. Some fruits are deficient in one or the other substance, and to the juice of these fruits the pectin or acid must be added. If this is kept in mind almost any fruit can be made to yield good jelly.

Group I. Perfect or ideal jelly fruits:

CURRENTS	SOUR APPLES	GRAPES	PLUMS	BERRIES
Black	Crab	Catawba	Damson	Blueberries
Red	Snow	Concord	Lombard	Cranberries
White	Etc.	Etc.	Wild	

Notes:

1. Various flavors and colors may be given to apple jelly, such as:
 Barberry or cranberry (cook the berries with the apples)
 Geranium leaf (good with snow-apple jelly)
 Vegetable coloring matter (such as rose or light green; mint is the usual flavor for use with the latter)
2. The best results are obtained if the fruit is under-ripe and tart.
3. Some varieties of quinces are members of this group.

Group II. Fruits containing sufficient pectin but too little acid:

BLAND APPLES	BERRIES	MISCELLANEOUS FRUITS
Maiden blush	Blackberries	Chokecherries
"Sweet"	Elderberries	Guava
Etc.	Raspberries	Peaches
	Strawberries	Pears
		Quinces (discard the cores or the jelly will not be clear)

Notes:

1. In order to supply the needed acid, add enough of any one of the following sour-fruit juices to make the peach or other fruit juice as sour to the taste as sour-apple juice:

Apple, sour (such as crab)	Grape
Cranberry	Lemon juice
Currant	Etc.

The following are among the especially good combinations for jelly:

Quince and cranberries (attractive looking)
 Quince, sweet apples, and a little lemon or cranberry juice
 Maiden blush apples and grapes
 Blackberries and currants
 Elderberries and wild crab-apples
 Red raspberries and currants
 Sweet apples and wild plums

2. Tartaric or citric-acid crystals dissolved in a little water are a possible substitute for sour-fruit juice (see Note 1), though their use is recommended for laboratory experiments and not for the average housekeeper. As a rule, they greatly alter the flavor of the peach or other juice; hence the jelly is often disagreeable to the taste.

Group III. Fruits containing sufficient acid but too little pectin:

Citrous fruits (pulp and juice):	Cherries
Grapefruit	Pineapple
Kumquats	Rhubarb
Lemons	
Oranges	
Tangerines	

Notes:

The four sources of pectin given in the following four notes are arranged in the order of their probable comparative value to the housekeeper.

1. In order to supply the needed pectin, add the juice of any of the "perfect" jelly fruits—such as currant, grape, or sour apple. Note that the perfect jelly fruits are useful in supplying pectin to fruits of Group III and in supplying acid to those of Group II.

Carrots are rich in pectin, hence the addition of ground raw carrots to the jelly fruit is a possible experiment for the housewife.

2. Commercial pectin, a by-product of cider-making, is a late product which is used by canning factories; no doubt it soon will be available for home use. It is a sirup which looks and tastes like thick apple juice. For jelly-making, add from $\frac{1}{8}$ to $\frac{1}{4}$ c. of this pectin sirup to 1 c. fruit juice. The larger the quantity of pectin sirup added, the larger the quantity of sugar that may be added and the greater the yield of jelly, but the flavor is impaired.

To secure (1) cider and (2) apple pectin:

a. Press (not cook) the apples in order to obtain cider.

b. Cook pulp (drained free of all cider) in water in order to extract the pectin.

3. The white peel of orange and other citrous fruits is also a rich source of pectin. The use of citrous pectin is recommended for laboratory tests, but not for the average housekeeper, since the flavor of the resultant jelly is often disliked.

To secure orange pectin:

- a. Mix the following ingredients thoroughly and let stand 1 hr.:

¼ lb. white peel of orange, ground in a food-grinder

1 c. water

2 tb. lemon juice

- b. Add 2½ c. water, and let stand 1 hr.

- c. Boil 10 min., then let stand until cold.

- d. Drain through a flannel jelly bag; press the bag.

- e. Drain through a second (clean) flannel bag; do not press the bag.

The liquid obtained is colorless, has very little flavor, and is about as thick as thin cream.

Add this water extraction of pectin to the fruit juice for jelly-making.

The following jelly recipe (usual proportions) is recommended:

1 c. non-pectin fruit juice

1 c. pectin (apple or orange)

1 c. sugar

Class experiment for jelly:

This is not a recipe, inasmuch as the flavor is not very good; ¼ c. total liquid is essential.

2 tb. fruit juice, secured from oranges or any other fruit of Group III

2 tb. pectin solution, secured from any of the following:

• Apples

White peel of orange or other citrous fruit

Citron melon (see Note 4)

2 tb. sugar

Boil the two liquids together 3 min., then add sugar and boil to jelly stage.

4. The citron melon may possibly prove to be of some aid in jelly-making. A certain magazine article (not very recent) asserts that the citron melon is a rich source of pectin; good jelly is said to have been made by cooking diced citron melon with any one of the following: diced orange pulp, pineapple, or rhubarb.

To secure citron-melon pectin:

This is a laboratory experiment.

- a. Chop fine or grind the entire citron melon, almost cover with water, and simmer until very tender. If desired, the melon may be soaked before cooking.

- b. Drain off liquid.

Mix the solution with the juice of any fruit of Group III, then proceed with the regular jelly method.

General Method for Making Jelly from Fruits of Groups I, II, and III

Broadly speaking, this is an example of the open-kettle method of food-preservation.

1. Wash fruit, preferably underripe, and place it in a porcelain kettle; the larger and harder fruits, such as apples, should be cut in small pieces.

2. If the fruit is juicy, add water until it is almost covered; if the fruit is dry, add water to cover completely.

3. Simmer the fruit gently until the juice runs freely, then drain in a jelly bag; do not stir the fruit while cooking, nor squeeze the bag. No matter to what group the fruit belongs, 1 lb. fruit should yield 1 pt. juice; this rule is very helpful in determining the quantity of water to add in making jelly.

4. Test the juice for pectin by this means: Place about 1 t. fruit juice in a tablespoon, add to it an equal amount of alcohol (such as 95 per cent grain alcohol), and mix well. The degree to which pectin is precipitated determines the quantity of sugar to be added for jelly; see step 5.

5. Measure sugar according to the following directions (see Notes 2 and 3):

One large lump (pectin) in spoon.....Measure 1 c. sugar to 1 c. juice. (Many cooks prefer but $\frac{3}{4}$ – $\frac{7}{8}$ c. sugar.)

Several smaller lumps in spoon.....Measure about $\frac{3}{4}$ c. sugar to 1 c. juice.

No lumps in spoon, simply a somewhat

thickened juice.....Measure $\frac{1}{2}$ c. or less sugar to 1 c. juice.

At the same time test the juice for acid in this manner: Add one drop lemon juice to the spoon containing the fruit juice and the alcohol; if the acid increases the precipitation of pectin, the conclusion is that more acid is desirable in the fruit juice. Hence add sour-apple, lemon, or other acid juice. (Note that acid in the juice is just as essential for jelly-making as is pectin.)

Another test for the acidity of the juice is to taste it; it should taste as sour as sour-apple juice.

If a juice is too sour, dilute it with water.

6. Heat the juice by itself just to the boiling point, then strain. -

7. Boil the strained juice $\frac{1}{2}$ –3 min.; the time depends on the quantity of juice. In the case of a small class recipe, do not boil the juice at all.

8. Add sugar and boil (not simmer) until the following tests hold true; the first test is the most valuable. Do not cook beyond the test stage, or the jelly will be tough.

a. Jelly falls from a spoon in two drops, which immediately form into one drop. The jelly should not break off in one broad "sheet" from the edge of the spoon; if it does this, the jelly will be tough, because boiled too long.

b. A few drops on a cold plate thicken quickly.

c. Jelly boils with thick, sticky bubbles, not watery ones.

The thermometer is a great aid in jelly-making, as it will indicate the approach of the jelly stage. The juice does not require careful watching until 102–103° C. is reached; it does require very careful watching after this point is reached.

9. Cool to just below the boiling point, then skim, and pour into hot clean jars. Sterilization of the empty jars does no harm, but is not essential. Why?

10. Let stand until firm, then cover with paraffin.

11. Economize by making jelly from the second, third, and even fourth extractions of juice; this is an important and practical suggestion for the housekeeper.

Prepare the second extraction as follows: Place the fruit pulp in a saucepan, add $\frac{1}{2}$ as much water as was added to the fruit for the first extraction, then proceed with the jelly as in steps 3–9.

Second-extraction juice, as a rule, is weaker in pectin than the first extraction, and hence requires less sugar. One expert reports the making of 16 glasses of jelly from 4 qt. currants; four extractions of juice were made.

Notes:

1. Other possible means of economizing are:
 - a. Make jelly from parings and cores of fruits left from other cooking.
 - b. Squeeze pulp from the bag and make "fruit butter."
2. If the juice does not thicken at all when the spoon test is made, it is not suitable for jelly unless combined with apple juice or other juices rich in pectin.
3. Quality of jelly is largely dependent on the quantity of sugar added. *Caution:* The most frequent cause of failure in jelly-making is an over-proportion of sugar to juice—that is, to the pectin in the juice. If too much sugar is added, the jelly is like a sirup and fails to set. If too little sugar is added, the jelly is tough and the yield of jelly is small. A jelly failure means a waste of both sugar and fruit.
- Jelly can be made without the use of any sugar. The chief function of sugar in jelly is to flavor and preserve.
4. *Class suggestion:* Each pupil to secure a quart basin full or three-quarters full of prepared fruit. One day prepare jelly from the first extraction; the next day prepare jelly from the second and third extractions. Much more than one jar of jelly should result from the quart of fruit; pupils to compete for the largest jelly yield.
5. *Experiment with juices of carrots and turnips:* Test the juices for pectin, then prepare jellies from them by the general method for fruit jelly; for the sake of economy omit sugar, since these jellies are not usually relished and serve simply as an experiment. Carrots and turnips yield firm jellies even though no acid is present.
6. Class to prepare an exhibit as follows:
 - a. Tests for pectin (add alcohol to test-tubes of fruit and vegetable juices)
 - b. Jellies from the three groups of fruits and from carrots and turnips
7. Pupil to study various jelly references, such as the following:
 - a. *Principles of Jelly Making*, by N. E. Goldthwaite; a bulletin published by the University of Illinois.
 - b. "The Secret of Good Jelly," by Isabel Bevier; see *Good Housekeeping* (1909), pp. 92-95.
 - c. *Extension Bulletin No. 6*, "Jellies, Preserves and Marmalades," Florida State College for Women.
 - d. *Successful Canning and Preserving*, by Ola Powell; published by Lippincott Co., 1917.

SYNOPSIS OF PRESERVATION OF FOODS BY SUGAR

- I. *Preservation by a large quantity of sugar with moist heat, and in some cases spice.*
 1. Marmalades.
 2. Jellies.
 3. Preserves, namely, fruit cooked in an open kettle in a heavy sugar sirup until tender and "transparent"; sometimes sun-cooked. As a rule, $\frac{3}{4}$ lb. sugar is used to 1 lb. fruit. Preserves are usually stored in air-tight glass cans; crocks are sometimes used.
 4. Candied fruits.
 5. Condensed milk (sweetened).
- II. *Preservation by a large quantity of sugar without heat.*
See typical recipe on page 35.

FOOD PRESERVATION—A SYNOPSIS*

Pupil to supply data for the second column, securing information from the recipes, pages 11-39, from home experience, dealers, etc.

METHODS OF PRESERVATION USED	A FEW EXAMPLES OF FOODS USED
1. Regulation of temperature during transportation:	
a. Cooling—prevents the decay and spoiling of foods in hot climates.....	
b. Heating—prevents the freezing of foods in passing through cold climates.....	
2. Drying or desiccation (removal of water from food by dry heat)—retards and prevents bacterial growth:	
a. Moderate dry heat, such as sun drying.....	
b. Medium dry heat, such as slow oven drying.....	
3. Sterilization by heat—destroys bacteria, molds, and parasites:	
a. Moist heat, such as boiling water and steam under pressure.....	
b. Dry heat at high temperature (350° F., or 177° C., or over), as in baking of bread or frying of meats in fat (see Note 4, p. 42).....	
c. Intermittent application of moderate heat: first, to kill bacteria; second, to allow spores to grow between heatings; third, to kill bacteria resulting from spore growth.....	
4. Pasteurization—destroys almost all bacteria but not the spores. Heat at fairly high temperature (140° F., or 60° C.) for a short time (30 min.).....	
5. Cold storage—retards the growth of bacteria and parasites:	
a. Refrigeration—temperature above freezing; varies somewhat for each particular food. Permits "ripening" of certain foods.....	
b. Freezing—stops practically all bacterial growth and chemical changes in foods.....	
6. Antiseptics—addition to foods of chemicals which retard or kill microorganisms:	
a. Not rendering foods harmful if antiseptics are used moderately—salts, fruit acids, benzoic acid, benzoate of soda, salicylic acid, boric acid, sulphur-dioxid, etc.....	
b. Making foods poisonous—mercuric chlorid, cresol derivatives, and phenols such as carbolic acid.....	

* This table was prepared by A. D. Emmett, Ph. D.

FOOD PRESERVATION—A SYNOPSIS—*Continued*

METHODS OF PRESERVATION USED	A FEW EXAMPLES OF FOODS USED
7. Pickling—retards growth of certain microorganisms:	
<i>a.</i> Acids, such as acetic in case of vinegar.....	
<i>b.</i> Brine or salt mixtures.....	
<i>c.</i> Condiments, such as spices.....	
<i>d.</i> Acid, salt and sugar mixtures, and sometimes glycerin. (Boric acid and benzoates are sometimes added also.).....	
8. Curing—inhibits growth of microorganisms:	
<i>a.</i> Wood smoke.....	
<i>b.</i> Sugar with salt (sodium chlorid).....	
<i>c.</i> Salts: saltpeter and sodium chlorid.....	
9. Preserving—stops growth of organisms:	
<i>a.</i> Sugar in large quantities to a sirupy consistency.....	
<i>b.</i> Glycerin and sugar—foods for exhibition, extracts, etc.....	
<i>c.</i> Alcohol—flavoring extracts, foods for exhibition, etc.....	
<i>d.</i> Kerosene—fruits, etc., for exhibition only.....	
10. Canning—excludes air, prevents aerobic bacterial growth and possible contamination from outside sources, and if foods are properly sterilized assures perfect preservation for unlimited periods of time:	
<i>a.</i> Tin cans. Seal all openings.....	
<i>b.</i> Glass jars. Fasten tops securely and tight. (see Note 1, p. 42).....	
<i>c.</i> Glass tumblers. Pour paraffin over surface of jelly or jam, then put on tin lid.....	
11. Packing—partial or complete exclusion of air (retards aerobic bacterial action and that of molds; also prevents loss of moisture or absorption of moisture):	
<i>a.</i> "Water glass" or sodium silicate, oils, paraffin, and varnish—complete exclusion of air.....	
<i>b.</i> Lime water—partial exclusion of air.....	
<i>c.</i> Ground cork, oats, and salt—partial exclusion of air.....	
<i>d.</i> Paraffin and oiled paper—complete exclusion of air if folds are sealed.....	
<i>e.</i> Tin foil, sized cloth (for wrapping hams, etc.), and paper—partial exclusion of air and retention or exclusion of moisture.....	
<i>f.</i> Paper cartons—partial exclusion of air.....	

Notes:

1. New rubber rings should always be used. It is recommended by some that the rings be dipped in glycerin to assist in the exclusion of air.

2. Which of the reagents in 6a, 7, 8, and 9 are lawful in all the states? Study the pure food laws.

3. In moderate quantities vinegar, some condiments, and saltpeter are harmless in the body.

4. With dry heat at 350° F., or 176° C., or over, the food will be sterilized if the inner part or center of the food reaches 212° F., or 100° C., and remains at this temperature for some time. Otherwise only the outer layer or crust will be sterilized, and therefore micro-organisms may still grow.

5. Dry heat at 350° F., or 176° C., or over is a very good temperature for sterilizing glassware, metals, and some grades of cloth. This temperature is just below the point at which paper will brown and yet not burn. Allow the oven to cool before opening the door, otherwise glassware will crack owing to the sudden change in temperature.

6. Define the terms *antiseptic* and *disinfectant*.

PART III
COMPLETE DISHES

SUGGESTIONS FOR LESSONS

STUFFED JUICY VEGETABLES

12. Baked stuffed tomatoes or peppers

STUFFED STARCHY VEGETABLES

13. Mashed-potato cups (includes boiling and mashing of potatoes)

COMPLETE-DISH HASHES

14. General recipe for hash

SAUTÉED COMPLETE-DISH BALLS

15. Sautéed meat balls

CREAMED PROTEIN FOODS

16. Creamed meat or fish on toast (includes first work with white sauces)

COMPLETE-DISH SANDWICHES

17. Hot cheese sandwiches

COMPLETE ESCALLOPED DISHES

18. Escalloped macaroni and cheese
19. Escalloped noodles and meat

COMPLETE-DISH CROQUETTES

20. Macaroni and cheese croquettes
21. Codfish balls (dropped croquettes)

COMPLETE-DISH LOAVES

22. Steamed salmon and rice loaf with tomato sauce (includes boiling of rice)
23. Baked beef loaf

COMPLETE-DISH STEWS

24. Lentil stew
25. Fish chowder

COMPLETE-DISH TURNOVERS

26. Meat turnovers

COMPLETE-DISH PIES

27. Meat pies

INTRODUCTION

DIETETIC VALUE OF COMPLETE DISHES

I. "Complete dishes" well-balanced meals.

Every complete dish is in itself a more or less complete and well-balanced meal with respect to protein, carbohydrates, and fats. A perfect balance is not always obtained, as the ratio of protein to starch in the various dishes ranges from 1:1 to 1:5.

Complete dishes are particularly useful for luncheons, suppers, picnics, and camp meals; some complete dishes are desirable dinner dishes.

The following are specimen tables¹ whereby the pupil can prove that any complete dish is or is not a balanced meal with regard to protein, etc.

Hash (See page 59)

MATERIALS	VOLUME	WEIGHT		PROTEIN CALORIES	TOTAL CALORIES
		LB.	OZ.		
Corned beef, cooked.....	2 c.	1		216	1,365
Potatoes, mashed.....	2 c.	1		50	310
Bacon, chopped; fat only.....	2 tb.		1	...	175
Onion, green pepper, etc.....	....		1	...	15
Water to moisten.....	½ c.		4	...	....
				266	1,865

The protein yields nearly 15 per cent of the calories in this dish. The corned beef used should be rather fat, otherwise an extra cupful of mashed potato should be added.

Creamed Chicken on Toast (See page 64)

MATERIALS (Individual portion)	VOLUME	WEIGHT		PROTEIN CALORIES	TOTAL CALORIES
		LB.	OZ.		
Toast	1 slice		1½	10	72
Chicken (canned), cooked, diced.....	2 tb.		1	22	103
Cream sauce	3 tb.		1	6	75
				38	250

Here the protein yields a trifle more than 15 per cent of the calories. If canned chicken is not used in this dish, the slice of toast should be larger, and liberally buttered, and the cream sauce should be richer and increased in quantity.

¹The calculations in these tables were made from various bulletins, including Bulletin No. 28, U.S. Dept. of Agri., *The Chemical Composition of American Food Materials*. The proportion of the calories furnished by the protein to the total calories in these recipes is estimated to be from 10 to 15 per cent. The recipes with the maximum of protein could have the starchy ingredients increased, thus reducing the cost while preserving the balance of nutrients.

Escalloped Macaroni and Cheese (See page 75)

MATERIALS (Individual portion)	VOLUME	WEIGHT		PROTEIN CALORIES	TOTAL CALORIES
		LB.	OZ.		
Macaroni, cooked	2 c.		11	27	210
Cheese, grated	1 c.		4	130	512
White sauce	1 c.		9	40	420
Buttered crumbs	$\frac{1}{2}$ c.		1	20	316
				217	1,458

The protein in this dish yields nearly 15 per cent of its calories.

Note:

Pupil to secure data for the following table:

Hot-Meat Sandwich (See page 72)

MATERIALS (Individual portion)	VOLUME	WEIGHT		PROTEIN CALORIES	TOTAL CALORIES
		LB.	OZ.		
Bread					
Sliced meat					
Sauce					

What percentage of the calories in this dish is yielded by the protein?

II. Large number of complete dishes possible.

Almost any number of complete dishes may be prepared. The national and most famous dishes of practically every country are a combination of several foods cooked and served together. Many more or less complete dishes and simple combinations may be made in addition to those for which recipes are given in this book; the following are some of them:

Bread and butter or gravy
Bread and whole milk
Bread pudding and cheese
Crackers and chocolate
Crackers or bread, and cheese
Crackers, berries, and milk
Cream of dried-legume soup—peanut,
pea, bean, or lentil
Custard ice cream and sponge cake
Dates stuffed with cream cheese or nuts
Liver and bacon on toast
Meat stew with dumplings or rice
Mince-meat pie

Tamales
Pork and beans, baked
Stuffed meats—fowl or steak (mock
duck)
“Boiled” dinner
Rice with cheese sauce
Rice snowballs
Rice-custard pudding
Potato salad with hard-cooked eggs;
see complete-dish salads, Book II
Oatmeal mush with whole milk
Poached eggs on toast
Cold protein-food sandwiches (such
as egg)

Pupil to compile a table for the discussion of the foregoing dishes and combinations; the following headings are suggested:

DISH	PROTEIN FOOD USED	STARCHY FOOD OR OTHER CARBOHYDRATE USED	FAT USED

Place the list of dishes in the first column. Then, using as reference the list, pages 48 ff., "Five Groups of Ingredients for Complete Dishes," specify in the other columns the names of the protein, starchy, and fatty foods which may be used in the various dishes.

ECONOMIC VALUE OF COMPLETE DISHES

Complete-dish recipes are excellent for utilizing the cheaper sources of protein, carbohydrates, and fats.

Each of the dishes constitutes a one-piece meal, and as a rule is economical in the matter of nutriment, expense, time, and labor.

Complete dishes furnish an excellent opportunity for using any tough meat, such as meat left over from soup. The chopping of meat helps to overcome toughness.

In general, soup meat may be used in any way in which other cooked meat is used. One bulletin¹ states that soup meat never loses more than 13 per cent of its true protein during the process of soup-making. High seasonings, such as onion, tomatoes, and dried herbs, are essential in using soup meat, because of the lack of extractives; either extract of beef or fresh meat can be made to take the place of part of the extractives. Study the matter of economy; note that sometimes it costs no more to buy fresh meat than to make the soup meat palatable.

¹ *Bulletin 162*, Agr. Exp. Sta., University of Illinois, by Grindley and Emmett.

Five Groups of Ingredients for Complete Dishes

The following groups of ingredients are the *keynote* to the complete-dish series, and may well be posted on the walls of the school and the home kitchen. These ingredients are largely left-overs. Note the large number of meat substitutes. These five groups offer a wide selection to the cook. It is essential that foods be selected from both Groups I and II for use in most complete dishes.

Group I. Protein Foods

(Use one or a combination in any complete dish)

CHEESE AND EGGS	FISH (Chopped, shredded, or flaked) (See Note 2)	LEGUMES (Cooked; mashed or whole)	MEATS (Raw or cooked)	NUTS (Chopped, or ground to meal or butter)
CHEESE Cottage Grated (much used): Swiss Parmesan American, dry Etc. Pimento EGGS Hard-cooked Sautéed Scrambled	Codfish: Fresh Salt Finnan haddie Salmon: Fresh Canned Tuna White Etc.	Beans: Navy Soy Kidney Lentils Peanuts: Raw Roasted Peas: Split Whole Etc.	Beef: Hamburg Roast Steak Soup meat Chicken Ham Lamb Mutton Veal Etc.	Almonds English walnuts Pecans Etc.

Notes:

1. A small sieve serves as an excellent individual cheese grater for the use of each pupil.
 2. If cooked fish is used, remove bones, then flake.
 3. Soy-bean curd, which is like cottage cheese in appearance, is much used by Orientals as a meat substitute.
 4. Peanut butter is, as a rule, a very economical meat substitute; it is sometimes sold in bulk for 15-25 cents per lb.
 5. When preparing meats, remove bone and cartilage, and often more or less of the fat. Care should always be taken when cooking, especially with such complete dishes as hash and stews, to remove all inedible materials from meat and other foods.
 6. It is economical to buy ham and bacon "ends."
 7. Chopped protein foods, especially meats and fish, spoil very quickly as a rule.
 8. It is necessary to use a low temperature with cheese and other protein foods; a high temperature toughens them.
 9. The following vegetable protein foods are used to a large extent by vegetarians; all are possible meat substitutes in complete dishes:
 - Nuts, and nut products (such as Nuttolene)
 - Protose, the basis of which is the gluten of wheat. Nuts of various sorts are mixed with the gluten to make protose. Protose may be used in complete-dish loaves, etc.
- Cottonseed meal is a meat substitute which is being considerably experimented upon at the present time. It may prove to be of some use in complete dishes and other cooking.

Group II. Starchy Ingredients*(Use one or a combination in any complete dish)*

BREAD	CEREALS (Cooked)	FLOUR PASTES	POTATOES (Cooked) (See Note 5)
Soft stale crumbs Cold biscuits Etc.	Corn meal Farina Hominy Rice	Macaroni Noodles Spaghetti Vermicelli	Cold boiled Pulp of baked Etc.

Notes:

1. Starchy ingredients are useful in extending the flavor of meat; that is, they make a small quantity of meat satisfying—a point of economy. Juicy vegetables also are often useful in extending the flavor of meat.

2. Boil macaroni in the following manner:

a. Place in boiling *salted* water and boil 20–40 min., or until tender; the time required depends upon the composition and age of the macaroni.

b. Drain, and rinse with *cold* water so as to harden the pieces and remove sticky liquid.

c. Drain, and dry in an oven or in a sieve held over the fire.

Boil other flour pastes in a similar manner.

3. Soup is often substituted for water in cooking flour pastes. Beware of soggy noodles, macaroni, rice, and other starchy foods. Why? To avoid soggy foods of this character, dry them thoroughly after cooking.

4. Some meat and other protein-food dishes, such as stews, are made complete by the addition of one of the following:

Dumplings

Borders of hominy, macaroni, mashed

Stuffing

potatoes, rice, etc.

5. The following substitutes for white potatoes in a meal are often of use in making complete dishes:

a. *Starchy roots and tubers* (all but the first two named are grown chiefly in the tropics; see *Bulletin 468*, U.S. Dept. of Agri.):

Sweet potato (most important)

Taro

Artichoke, Jerusalem

Yam

Cassava

Yautia

Dasheen (grown to some extent in the United States)

b. *Cereals*, if supplemented by foods which produce an alkaline ash in the human system, such as fresh fruits and vegetables. (Potatoes produce an alkaline ash, while cereals result in an acid ash. This point is taken up in more detail in the fourth book of this series, *Diet for Invalids*.) Cereals include the following:

Flour pastes (such as macaroni)

Hominy or rice

Mush prepared from corn meal or other finely ground cereal, *sautéed* or fried; corn-meal mush is delicious with chicken

c. *Bananas*, raw or cooked (baked, *sautéed*, etc.)

d. *Chestnuts*, boiled or roasted

Group III. Liquid and Binding Material
(Use one or a combination in any complete dish)

SAUCES	MISCELLANEOUS LIQUIDS	
Brown	Butter, or a substitute, melted	Starchy water from rice or a
Gravy	Cream	flour paste
Horse-radish	Egg, raw (beaten or unbeaten)	Tomato juice
Stock	Milk	Vegetable stock (from onions,
Tomato	Meat stock	dried legumes, etc.)
White		Water

Notes:

1. See list of butter substitutes (bacon drippings, etc.), Appendix, page 176.
2. Raw egg primarily is a binding agent. It is often used in combination with a sauce.

Group IV. Seasonings
(Use any combination of seasonings to taste)

ACID SEASONINGS	HERBS AND RELISHES	JUICY OR FLAVOR VEGETABLES (See Notes 3-6)		MISCELLANEOUS
Catsup or chili sauce	Bay leaf	Beets	Parsley:	Bacon, chopped
Jelly, tart (such as currant)	Capers	Cabbage	Chopped	Cheese, grated
Lemon juice	Celery salt	Carrots	Whole	Eggs, hard-cooked
Pickles (such as dill)	Curry powder	Celery:	Peppers:	and chopped
Tomato paste	Garlic salt	Stalk	Green or ripe	Flour, browned
Tomato soup (as purchased)	Horse-radish	Root	Mild or hot	Lemon rind
	Olives	Chives	Salsify	Meat extract
	Onion salt or juice	Mushrooms	Etc.	Worcestershire
	Pepper	Onions		sauce
	Pimentos	Parsnips		Etc.
	Sage			
	Salt			

Notes:

1. Salt generally is essential.
2. Cayenne is especially good with cheese.
3. Juicy vegetables are used raw or cooked, and usually chopped, mashed, or cut in small cubes.
4. For extra flavor, many of the drier of the juicy vegetables may be sautéed with the fat; celery, onions, and green peppers are often so treated. Do not brown the fat. Why?
5. Many times juicy vegetables may be used in large proportion in complete dishes and in this way may be substituted for part or all of the starchy material; beets and many other juicy vegetables are rich in carbohydrate material. Name such carbohydrates. Mash such vegetables if for use in sautéed balls; mash or chop them if for use in hash.

The juicy vegetables left from making soup stock may be utilized in complete dishes.

6. With lentils it is well to use plenty of tomato and onion seasoning.

7. For recipe for tomato paste — dried tomatoes — see page 15.

Group V. Garnishes

VEGETABLES	MISCELLANEOUS
Asparagus tips	Cheese, grated or sliced
Carrots, beets, and other root vegetables, cooked and cut in slices, cubes, or fancy forms	Crumbs, buttered
Celery tips	Eggs, hard-cooked and sliced
Cress	Egg-yolks, hard-cooked and put through ricer or sieve or sliced in fancy shapes
Parsley, whole or chopped	Lemon, sliced
Peas, whole green	Olives:
Squash, or white or sweet potatoes, mashed and put through pastry bag for "rose" or other border	Green
Pimentos	Ripe
Tomatoes, sliced	Paprika
Etc.	Pickles, such as dill, sliced
	Rice, cooked and rolled in "riced" egg-yolk
	Sauce (such as tomato)
	Etc.

Notes:

1. Avoid overgarnishing. Never use inedible garnishes or those that are incongruous in color or of unpalatable flavor.

2. Buttered crumbs are prepared as follows; they are used as a browning agent for top surface of many dishes, such as the complete-dish series. See Appendix, page 172, for the preparation of dry crumbs.

- a. Mix 5-8 parts fine bread or cracker crumbs with 1 part melted butter or a butter substitute; do not cook the two together.
- b. Spread over top of dish in a $\frac{1}{8}$ in. layer.

Miscellaneous Notes on Cooking of Complete Dishes

1. All complete dishes allow great variation in ingredients, both raw and cooked foods being used; a few specifications are given for each of the recipes appearing on pages 52-104.

2. In addition to fresh ingredients, the following are often used, as in camp cooking:

Canned foods (such as salmon, corned beef, lentils, and beans)

Condensed foods (such as milk, cream, tomato and other soups)

Dried foods (such as potatoes, onions, parsley, carrots, celery, and the powdered soups)

3. Solid foods for complete dishes are used in various forms, such as:

Chopped, ground, or grated

Sliced

(most protein foods are so treated)

Whole

Mashed

4. Note the great similarity of ingredients among many complete dishes, such as hash, sautéed balls, and meat loaf.

STUFFED JUICY VEGETABLES, BAKED OR BOILED

(Complete dishes)

Luncheon

Baked stuffed peppers
Lettuce salad

✓ Fried egg plant
Bread and butter

Baked apples

A Typical Filling for Stuffed Juicy Vegetables

Ingredients:

1-3 t.

1 tb.

1 tb.

$\frac{1}{2}$ t.

few drops

$\frac{1}{8}$ t.

dash

1 t.

$\frac{1}{2}$ t. of each

$\frac{1}{2}$ -1 c. cold cooked meat, chopped

$\frac{1}{2}$ -1 $\frac{1}{2}$ c. cooked rice

$\frac{1}{3}$ c. bread or cracker crumbs

Liquid:

2 tb. fat, melted, such as bacon fat or butterine

Water, stock, milk, white sauce, beaten egg, or tomato juice to moisten filling

Seasonings:

Salt to taste (about $\frac{1}{2}$ t.)

Pepper to taste

3 tb. browned flour

1-2 tb. of one or more of the following, chopped:

Celery

Onion

Pepper, sweet green

Tomato pulp

Etc.

Method:

1. Sauté the celery, onion, and green pepper 2-3 min. in the fat.
2. Add all the other ingredients and mix well; mixture should be as stiff as soft biscuit dough.

Notes:

1. This filling is especially good for tomatoes, peppers, onions, and cabbage; special recipes for these vegetables are given on page 53. The class recipe is sufficient for one medium tomato or pepper, or one large onion; use 2 t. buttered crumbs on top of each vegetable.

2. In preparing all fillings for juicy vegetables, select the ingredients from the list, pages 48ff., "Five Groups of Ingredients for Complete Dishes." Use almost any combination of ingredients—that is, if palatable—and mix in almost any order. Either raw or cooked chopped meat and fish may be used. Starchy food should be cooked; coarse bread or cracker crumbs are often used. Any sauces utilized should be very thick. High seasonings are desirable.

Baked Stuffed Tomatoes

Method:

1. Wash ripe, medium-sized tomatoes.
2. Cut a thin slice from the stem-end of each tomato and remove the pulp by means of a spoon.
3. Add the filling, cover the top with buttered crumbs, and bake 10-15 min., or until crumbs are brown; do not cook to pieces.

Baked Stuffed Peppers

Method:

1. Wash medium-sized sweet green peppers. Cut the stem from each pepper so that the pepper will stand. Cut off the end opposite the stem and remove all the seeds; the opening should be $1\frac{1}{2}$ -2" in diameter.
2. Place peppers over fire in cold water, and parboil 5-15 min., time depending on the sweetness of the peppers. Change water two or three times during the process if peppers are at all strong.
3. Add the filling, cover with buttered crumbs, and bake 10-30 min., or until brown and hot throughout; do not cook to pieces. Place the end-slices on top as covers, if desired.

Notes:

1. Omit the parboiling if the peppers are very sweet.
2. If preferred, split the peppers lengthwise and stuff both halves.

Baked Stuffed Onions

Method:

1. Wash large onions.
2. Remove skins, and cook onions 10 min. in boiling salted water just to cover onions; saucepan to be uncovered.
3. Cool, and remove the heart or core of each onion; the layers or lamellae can be pulled out one by one.
4. Add the filling, cover with buttered crumbs, and bake in a moderate oven 15-20 min., or until tender and brown.

Boiled Stuffed Cabbage

Method:

1. Wash a firm cabbage.
2. Remove outside leaves, then using a knife and a spoon, and working from the stem-end, scoop out the inside of the cabbage.
3. Sprinkle the inside of cabbage with salt, add the filling, and close the opening with pieces of cabbage.
4. Tie the cabbage tight in a square of cheesecloth, and cook in rapidly boiling water; allow 30-35 min. for a 5" cabbage, and more time for a larger cabbage. Turn the cabbage over once or twice during the cooking.
5. Remove cloth, place the cabbage stem-end down on platter, sprinkle with salt and paprika, and slice. The cabbage should be crisp, not flabby.

Notes:

1. Use the discarded cabbage center for salad or for boiling.
2. If preferred, use the following filling; it is sufficient for one firm cabbage 5" in diameter. Such a cabbage furnishes six servings. (Sauté the vegetables 2-3 min. in the fat before mixing with the remainder of the filling.)

$\frac{1}{2}$ c. chopped cooked meat (such as Hamburg steak or left-over roast)

$\frac{1}{2}$ c. cooked rice

Liquid:

1 egg, well beaten

2 tb. milk

1 tb. fat, melted (such as bacon fat)

Seasonings:

Salt to taste (about $\frac{1}{2}$ t.)

$\frac{1}{4}$ t. paprika

$\frac{1}{4}$ t. celery salt

1 tb. onion, chopped

1 tb. sweet green pepper, chopped

Supplementary Notes

1. The following vegetables require parboiling before being stuffed:

Egg plant

Cucumber, green or yellow

Onion

Pepper, sweet green

Turnip

Etc.

Artichoke, French

The following vegetables do not require parboiling before being stuffed:

Tomato, ripe

Cabbage:

Whole

Single leaf

The following may be stuffed in the same manner as juicy vegetables but are not to be parboiled before being stuffed:

Skin of a baked potato

Grapevine leaf

Shell of a squash, raw or cooked

Corn husk

} Stuff as rolls,
} rather than cups

2. Most juicy vegetables are baked, not boiled, after being stuffed. Cabbage is usually boiled after being stuffed, although, if parboiled, it may be baked. Steam some of the vegetables after stuffing, if preferred.

3. Any stuffed vegetable is attractive if served in a bed of cooked rice.

4. Note the following suggestions for baked dishes:

a. Bake the vegetables until brown and hot throughout. It is sometimes well to baste while baking, using a mixture of $\frac{1}{2}$ c. water and $\frac{1}{2}$ tb. butter or a substitute.

b. Buttered crumbs on top are desirable with all baked stuffed vegetables.

STUFFED STARCHY VEGETABLES

(*Complete dishes*)

Luncheon

Potato cups

Bread and butter

Chocolate cornstarch pudding

Celery salad

Milk

The following recipes for steaming, boiling, and mashing potatoes are preliminary work for the stuffing of starchy vegetables.

Steamed Potatoes

Method:

1. Scrub the potatoes and pare or not, as preferred.
2. Place in a steamer, cover very tight, and steam 30 min., or until tender; keep water boiling in lower part of steamer.
3. Add salt (except when it is expedient to serve the potatoes in their "jackets").
4. Serve in any of the ways in which boiled potatoes are served.

Boiled Potatoes

Method:

1. Select potatoes of uniform size and scrub with a brush.
2. Pare if desired. If potatoes are old and strong-flavored, soak them several hours in cold water, then pare.
3. Place old potatoes over fire in cold water to cover. Place new potatoes in boiling water to cover; add them one at a time so as not to stop the boiling. (See Note 1.)
4. Boil gently 20-35 min., or until tender throughout when tested with a fork; do not boil potatoes rapidly or they will burst. A potato is done just as soon as it is easily pierced with a fork; it is overdone if it falls to pieces.
5. Drain at once, for the potatoes become soggy if allowed to stand in water after they are tender.
6. Dry the potatoes by shaking them in a colander over the fire or in the oven.
7. Place in an uncovered dish, and serve immediately in any of the following ways:

Plain

With melted butter

With cream sauce containing grated cheese or finely chopped parsley or pimentos

Why serve immediately?

Notes:

1. The potatoes should be salted.

Pupil to determine whether or not it matters when the salt is added by experimenting as follows with the halves of a raw potato:

- a. Boil one half in unsalted water, then drain and sprinkle with salt.
- b. Boil the other half in salted water (using 1 h. tb. salt to 1 qt. water).

Compare the halves as to flavor and dryness. A properly cooked potato is of good flavor, and dry and mealy, not soggy.

2. Cook the potatoes with the cover of saucepan drawn to one side; this is particularly important with potatoes that are cooked in their jackets. Potatoes boiled in a closely covered vessel with unbroken skins will be rank in flavor and become dark and soggy.

3. Sometimes a large potato becomes tender on the outside while the inside remains hard. In such a case, chill the outside of the potato by adding a little cold water to the saucepan; the inside of the potato will be cooked tender by the heat left in it.

4. Do not serve boiled, steamed, baked, or mashed potatoes in closely covered dishes or they will become soggy. Why? If boiled potatoes are done a few minutes before the meal is ready, cover them with cheesecloth or other porous cloth, not a tight cover; the cloth absorbs any water formed by the condensation of steam.

5. If a potato is to be boiled in its jacket, cut a thin slice from each end so as to allow a vent for the escape of the steam and thus keep the potato from bursting.

6. A good class exercise consists in boiling and steaming potatoes at the same time, in the following manner:

- a. Boil potatoes in a deep saucepan, such as the upper part of a small double boiler.
- b. Steam potatoes in a sieve placed in the top of the saucepan.

The two lots of potatoes should cook in about the same time. Why?

7. Other starchy vegetables are steamed or boiled in much the same way as potatoes except for variation in time according to the size of the vegetable.

Mashed Potatoes, White or Sweet

Method:

1. Scrub potatoes with a brush, pare, boil, and drain.
2. Shake them in the oven or over the gas until they no longer appear wet.
3. Mash at once until very smooth and light, using a fork, wire masher, or other beater, or force through a ricer or coarse sieve. The potatoes will not be light if they have been overcooked or not dried out later.

4. Add seasoning and hot liquid in the following proportions:

3 tb.	2 c. mashed potatoes
$\frac{1}{4}$ t.	1-3 tb. butter.
$\frac{1}{2}$ t.	$\frac{1}{2}$ t. salt
dash	$\frac{1}{4}$ t. white pepper
2 t.	Hot milk or cream to moisten — about 4 tb. (see Note 2)

5. Beat with a fork or a strong egg-beater until very light and white; potatoes will not beat light with air unless they are first made creamy with hot milk or cream. (Note increase in volume upon beating air into the potatoes.)

6. Serve hot, and at once, or the potatoes will fall and be soggy.

Notes:

1. Both boiled and steamed potatoes may be mashed.
2. If very creamy potatoes are desired, add extra milk or cream.
3. Potatoes, if they are properly cooked and mashed, will be characterized by:

Lightness or fluffiness
 Creaminess; no lumps
 Whiteness (air whitens)

4. In addition to speed in working, the essentials for good mashed potatoes are hot milk or cream and hot dishes.

Though cold mashed potatoes may be successfully heated, they are never quite so good as freshly cooked potatoes.

5. Plain mashed potatoes may be utilized in the following ways:

Potato puff (see page 129, under baked potatoes)
 Potato balls, that is, flat cakes sautéed
 Potato for garnishing (a pastry bag is generally used, as for making a border of "roses" for fish or meat)
 Croquettes

Stuffed Starchy Vegetable, Baked

Method:

1. Scoop out the center from one of the following starchy vegetables, raw or cooked:

Artichoke, Jerusalem	Potato, sweet	Yam
Dasheen	Potato, white	Etc.

2. Fill with a mixture of the following, selected from the list, pages 48 ff., "Five Groups of Ingredients for Complete Dishes":

Chopped protein food, raw or cooked
 Liquid
 Seasonings

3. Cover with buttered crumbs, and bake until tender and brown.
4. Garnish, and serve.

Note:

If preferred, a cup molded from one of the following cooked starchy materials may be substituted for the solid-vegetable cup:

- a. Bread or toast case, formed by scooping out the top from a cube (or other form) of stale bread or toast.
- b. Left-over cereal, molded (such as hominy or rice).
- c. Flour paste (such as macaroni or spaghetti), the cooked paste being packed in molds.
- d. Chestnuts, mashed and molded.
- e. Starchy vegetable, mashed and molded; a recipe for potato cups is given on page 58.

Raw egg is useful with *b*, *c*, *d*, and *e*, both as a binding and as a browning agent. Soft bread crumbs are sometimes useful as an additional binding agent in molding mashed potatoes and similar materials into cups.

Mashed-Potato Cups**Ingredients:***(Six balls or servings)*

2 t.	½ c. finely chopped left-over cooked meat, such as soup meat or roast beef
3 tb.	2 c. mashed potatoes, whipped thoroughly with the following (see Note 2):
½ t.	1 tb. butter
dash	½ t. salt
dash	¼ t. white pepper
¼ t.	2 t. egg, slightly beaten
2 tb.	½ c. left-over meat gravy (or tomato or white sauce)
	Buttered crumbs:
2 t.	6 tb. cracker crumbs
½ t.	1½ tb. butter

Method:

1. Mix the meat with the gravy.
2. Mold the mashed potatoes into six balls, scoop out top of each ball with a spoon, and fill with the meat mixture.
3. Cover the top and sides of each ball with buttered crumbs; press the crumbs *gently* into the sides, but not too deep.
4. Bake on the top shelf of a very hot oven 15–20 min., or until brown on the tops and sides. If necessary, brown the balls by holding them next to the broiling flame.
5. Garnish with paprika and parsley.

Notes:

1. Various meat substitutes may be used in place of meat; select from foods in Group I, page 48.
2. The potatoes should be thoroughly dried before being mashed.
3. A good substitute for left-over meat gravy is the following; cook until very thick, using any of the three sauce methods given on pages 70f.

½ t.	1 tb. butter or a substitute
½ t.	1 tb. flour
dash	½ t. salt
dash	pepper
½ t.	½ t. extract of beef
2 tb.	½ c. water or milk

4. A good complete dish is prepared as follows:
 - a. Prepare a "cup" from potatoes, rice, or other starchy food.
 - b. Drop a raw egg in the center, and bake the whole until the egg is set.
5. See recipe for stuffed baked potatoes, page 128.

COMPLETE-DISH HASHES

Breakfast

Hash

Stewed Prunes

Cracked wheat

Toast

Coffee

General Recipe for Hash

Ingredients:

(8 average servings)

2 tb.	2 c. cooked protein food (such as meat), chopped or ground
2 tb.	2 c. cooked foods rich in starch or sugar (such as potatoes or beets)
1-3 t.	Liquid to moisten ($\frac{1}{4}$ - $\frac{1}{2}$ c. generally required)
	Seasonings to taste, such as:
dash	$\frac{1}{4}$ t. pepper
dash	1 t. salt
$\frac{1}{4}$ t.	1-2 tb. bacon or other fat
$\frac{1}{2}$ t.	2 tb. onion, chopped
$\frac{1}{4}$ t.	1 tb. sweet green pepper, chopped
	Etc.

Method:

1. Mix all the ingredients.
2. Cook in a sautéing pan 5-15 min. or bake in an oven 30 min., stirring every few minutes; keep pan covered in either case. If a browned hash is desired, omit the stirring toward the last and cook until brown on under side; fold over double like an omelet, if preferred.
3. Garnish with parsley.

Notes:

1. Extra flavor is secured by sautéing together the fat, onion, and green pepper.
2. In preparing the four ingredients for hash, select from the list, pages 48ff., "Five Groups of Ingredients for Complete Dishes."
3. The carbohydrate material used in hash usually consists of cooked potatoes, chopped, diced, or mashed. Raw potatoes, chopped fine, are occasionally used; if they are used, allow extra time for cooking the hash.
4. Vary the proportions in the given recipe as desired; for instance, if the carbohydrate material consists of turnips, beets, or other juicy vegetable, it is often well to use but 1 c. protein food to 2 c. carbohydrate material.
5. Remove all but a little fat from any meat used. Avoid grinding meat to a pulp. Corned beef is especially good for hash; a fireless cooker is convenient if the meat is cooked at home. Sometimes during normal times the cheaper form in which to purchase corned beef is in the can, since there is no waste.

6. If legumes are substituted for meat, mash them.
7. Hash cakes may be made, if preferred, as follows:
 - a. Mold the hash into small round flat cakes, then sauté until brown on one side or on both sides; if desired, fold over double like omelets.
 - b. Turn out on platter by inverting pan.
8. Note two excellent methods for using left-over corned-beef or any other hash:
 - a. Bake hash in ramekins or custard cups, then place a poached egg on top of each dish, and serve.
 - b. Spread hot hash on rounds of toast, place a poached egg on top of each, and serve at once.

SAUTÉED COMPLETE-DISH BALLS

Dinner

Meat balls with brown sauce
Cucumber salad

Stewed corn
Bread and butter

Fresh fruit

General Recipe for Sautéed Balls

Ingredients:

(6-9 servings)

2 t.	1 c. ground meat or other protein food (usually cooked)
1 tb.	1-2 c. potatoes or other starchy material (usually cooked)
¼ t.	Liquid to moisten to a good consistency for molding (see Note 3)
dash	Seasonings to taste

Method:

1. Mix all the ingredients to form a soft dough, then mold into small round flat cakes or balls.
2. Roll balls in a small amount of one of the following (see Note 1):
Dry bread or cracker crumbs
Corn meal
White flour
3. Sauté (or pan-broil?) in hot bacon fat or suet until brown on both sides. (For quantity of fat to use in pan, see "Pan-Broiling and Sautéing," page 63.)
4. Serve with a sauce and garnish with parsley.

Notes:

1. If preferred, roll the balls in egg before covering them with starchy material. In sautéing these balls or any other foods, one aim is to turn the foods to a golden brown. Note the chief browning agents:

Egg	Starch
Fat	Sugar (used with apples, etc.)

2. Dip the balls in buttered crumbs and brown in the oven, if preferred; if such balls are made large, so-called rolls result. Meat roll is especially good.

3. Liquid or binding material is not always necessary.

4. If onion, green pepper, and celery are included among the seasonings, it is well to sauté them with the fat before adding them to the meat or other protein food; vegetables as a rule require longer cooking than protein foods.

5. To select each of the four ingredients in this recipe, see list, pages 48 ff., "Five Groups of Ingredients for Complete Dishes."

6. Less than 1 c. starchy material may be used, if preferred; but note that the dish cannot be classed as "complete" if a minimum amount of starch is used. Soft stale bread crumbs are often included among the starchy ingredients.

7. Both raw and cooked foods are included among the ingredients for sautéed complete-dish balls; for example, meat is used raw or cooked. Any of the following foods may be used:

Cheese, grated
 Cheese, cream (such as pimento), whipped until light
 Eggs (hard-cooked), chopped
 Legumes, cooked and mashed
 Nuts (such as peanuts ground to a butter)
 Cereals (breakfast), cooked
 Vegetables, mashed or finely chopped
 Etc.

FOUR SPECIFIC SETS OF INGREDIENTS FOR SAUTÉED BALLS

(Complete-dishes)

Meat Balls

Ingredients:

(6-9 servings)

2 t.	1 c. finely ground cooked meat (such as left-over meat or sausage)
1 tb.	1-2 c. mashed potatoes
none	2 t. butter or a substitute, melted
$\frac{1}{4}$ t.	1-2 tb. egg, as a binding agent
$\frac{1}{4}$ t.	1 tb. chopped onion, sautéed in a little bacon fat, if desired
dash	Other seasonings to taste

Note:

Egg is not always necessary, especially if either of the following is used as a binding agent:

A few soft bread crumbs
 Some liquid other than egg

Legume Balls

Ingredients:

2 c. cooked legumes (mashed), selected from the following:
 Beans (such as navy or kidney)
 Peas
 Lentils
 Etc.
 1 t. vinegar
 $1\frac{1}{2}$ -2 t. molasses
 Salt and pepper
 $\frac{1}{8}$ t. mustard

Note:

If mixture is not of the right consistency to mold, add soft bread crumbs; note that, from the food standpoint, most legumes are so nearly "complete" in themselves that the addition of extra starchy material is not necessary. (See soy beans, page 144, as to starch content.)

Nut-Butter Balls

Ingredients:

- $\frac{1}{2}$ -1 c. nut butter (such as almond or peanut)
- 1 c. mashed potatoes
- Salt

Note:

Roll the balls in cracker crumbs before sautéing.

Cheese Balls

Ingredients:

- $\frac{1}{2}$ c. (not more) grated cheese
- 1 c. mashed potatoes
- Salt and paprika

Note:

Roll the balls in cracker crumbs and sauté over a very low flame.

PAN-BROILING AND SAUTÉING

	AMOUNT OF FAT USED IN PAN	FOODS FOR WHICH USED
Pan-broiling . .	{ Either put no fat in the pan, or use just enough to grease the pan. In the latter case, the test is for no <i>free fat</i> in the pan; a good plan is to grease the pan lightly, then invert so as to determine that no extra drops are retained.	<ul style="list-style-type: none"> a. Foods of a smooth surface, such as potato cakes. b. Foods which have no coating added, and which, as a rule, contain some fat, such as steak and Hamburg steak.
Sautéing	{ Put 1-4 t. fat in a sautéing pan of ordinary size. The amount of fat depends on the kind and quantity of food, and the length of the period of cooking. (Use $\frac{1}{4}$ t. fat for the class recipe for sautéed balls, page 61.)	<ul style="list-style-type: none"> a. Foods of a rough, dry surface, such as breaded chops; these foods will not brown, as a rule, if pan-broiled. b. Foods containing little fat and flavor.

Notes:

1. Grill-broiling is broiling on a grill next the flame; the meat has no opportunity to stand in even a small quantity of fat. Frying is cooking in fat several inches deep. Browning of the food, as a rule, is one chief aim in broiling (pan or grill), sautéing, and frying.

2. Greasy foods are objectionable to most persons. Sautéed foods are very likely to be greasy; hence, wherever possible, pan-broil foods or fry in deep fat in preference to sautéing them. Frying and sautéing are often objectionable methods of cooking, particularly in work with children's or invalids' diet; in such cases baking is a good method to substitute.

Various methods, such as the following, may be employed in cooking certain foods:

- a. Croquettes; fry, or dip in buttered crumbs and then bake until brown.
- b. Protein-food balls, such as meat; sauté, or dip in buttered crumbs and bake until brown. Potato balls and other balls of the starchy type are cooked by the same methods.
- c. Mush, such as corn meal; fry the slices, sauté them, or dip them in buttered crumbs and then bake.

CREAMED PROTEIN FOODS; WHITE SAUCES AND THEIR DERIVATIVES

Breakfast

Creamed fish on toast

Stewed apricots

Farina

Muffins

Coffee

Creamed Meat or Other Protein Food

(A complete dish)

Ingredients:

1 tb.	1 c. meat or other protein food, selected from the foods listed on pages 48ff., "Five Groups of Ingredients for Complete Dishes"
½ slice toast	Crackers or slices of toast (prepared from bread, rolls, or biscuits), or one of the following substitutes: Toast boxes (see recipe, page 65) Biscuit-dough cornucopias Shredded-wheat biscuits Flat cakes composed of toasted cereal flakes Puff-paste patty shells (expensive) Swedish timbales (starchy content small) Popovers (filled through openings in the side)
½-1 t.	1 c. medium sauce: 2 tb. white flour (or 4 tb. mediumly browned flour)
½-1 t.	2 tb. butter or a substitute
3 tb.	1 c. liquid; use one or a combination of the following: Milk or cream Tomatoes, strained Stock or water Etc.
dash	¼-½ t. salt (omit in the case of salt meat and fish)
dash	Other seasonings to taste, selected from those listed on page 50, "Five Groups of Ingredients for Complete Dishes." The following chopped seasonings are especially desirable with tuna and other fish: Mushrooms Pimentos Peppers, sweet green Celery

Method:

1. Add the prepared protein food and seasonings to the hot cooked sauce and simmer 1-3 min. *Exception:* Cook a cheese mixture in a double boiler, and heat just until the cheese is melted.

2. Pour over crackers or toast, garnish with paprika and parsley, and serve.

Notes:

1. If shredded-wheat biscuits are used, toast until crisp, then scoop out a hollow in the top by means of a paring knife; later fill this cavity with creamed food; ham is palatable.

2. Browned flour is often substituted for the white flour of sauce, especially in the case of dried beef.

3. If desired, 1 egg, well beaten, may be added to the cooked sauce.

4. Types of creamed foods in general are as follows, all of them being excellent camp dishes:

- a. Toast, or a substitute, with a sauce containing chicken, oysters, salmon, or other protein food.
- b. Toast, or a substitute, with a sauce containing corn, peas, carrots, spinach, or other vegetable food; use the same proportions of sauce, etc., as in the recipe given for protein foods.
- c. Toast, or a substitute, with a sauce (simple) only, such as cream toast and tomato toast; serve either as a vegetable or as an entrée. Grated cheese is a good garnish for these toasts.

5. Fruit toasts (see the third book of this series, *Diet for Children*) bear a resemblance to this recipe; mashed or whole fruit is poured over toast or a substitute.

Toast Boxes

Method:

1. Slice all the crust from a loaf of bread 2-3 days old.

2. Cut the loaf into any solid forms desired, such as:

- Circular
- Cubical
- Diamond-shaped
- Rectangular

The depth of each form should be at least $1\frac{1}{2}$ -2"; the general size is a matter of choice.

3. Scoop out a hollow or "cup" in the top of each form by means of a knife and a spoon.

4. Dip each shell into melted fat, such as butter or a substitute, or sprinkle with melted fat.

5. Using the broiling oven, toast the bread on all sides to a delicate brown. If preferred, fry until brown in deep fat; omit step 4 in this case.

6. Fill with any protein-food, vegetable, or fruit filling; as a rule, mix the foods with sauce before placing them in the toast box.

7. Garnish with parsley and yolk and white of hard-cooked eggs.

Notes:

1. If preferred, brown the form and then scoop out the top.

2. One large toast box may be made by using the whole loaf; it is attractive looking for a family meal.

3. "Croustade" is the name applied to a certain type of crisp case or patty made to hold a filling. Note the following kinds of croustades:

- Toast box or croustade
- Rice croustade
- Hominy croustade

For rice croustades see recipe on page 378, *Boston Cooking-School Cook Book*, by Fannie Farmer.

PREPARATION OF PROTEIN FOODS FOR CREAMED DISHES

Food	Preparation
Left-over cooked meat of all kinds, such as chicken, ham-ends boiled, roast, steak	Slice thin, grind, or cut in cubes.
Dried beef.....	{ Shave, remove any skin or stringy portion, then tear slices into small pieces. Cover with boiling water and let soak 2-3 min. Drain, and dry well. (See Note 1.)
Sweetbreads, beef (see Note 2).....	{ Wash sweetbreads and soak them in cold water 1-2 hr. Drain, and cover with boiling salted water containing a little acid; allow 1 t. salt and 1 t. vinegar to each large single sweetbread. Simmer 20 min., or until tender. Drain and plunge into cold water at once in order to harden the meat and preserve the color. Remove all fat, pipes, and membrane.
Brains, calf or beef (see Note 3).....	{ Wash thoroughly 1 lb. brains, and soak them over night in 1 qt. cold water containing 2 t. salt. Remove outer skins, roll in flour or cracker crumbs, and sauté in a hot pan until brown on both sides. Cover tight, and cook over a low flame 20 min. longer, or until well done.
Unsalted fish, cooked, such as canned tuna or salmon	{ Remove bones. Shred or mince.
Codfish salt or dried.....	{ Shred, and cook several hours in warm water to cover fish. Simmer 5 min., then drain. Add fresh water and simmer 5 min., or until tender.
Finnan haddie, smoked.....	{ Cut fish in strips, cover with cold water, and gradually bring to the boiling point. Reduce heat, and let stand 25 min. just below the boiling point. Drain, and rinse. Flake fish.
Cheese (see Note 4).....	Grate or shave thin.
Eggs, hard-cooked.....	Slice or chop.
Legumes, dried, such as beans, lentils, peanuts (raw), peas (see Note 5) ..	{ Soak over night in cold water to cover. Drain, add fresh water, simmer until very tender, then mash; press through a sieve, if preferred.
Nuts, such as almonds, pecans, or roasted peanuts (see Note 6)	{ Prepare meal by chopping the nuts, or grinding in a meat- or almond-grinder. Prepare butter by grinding to a smooth paste in a meat-grinder. (See Notes 7, 8.)

Notes:

1. If preferred, frizzle or curl the dried beef 2-3 min. in a little hot bacon or other fat before adding it to the sauce; this process possibly improves the flavor, but it also toughens the meat.

2. Calves' sweetbreads may be used, but they are much more expensive than the beef.

3. Creamed brains are cheap and good; they are an excellent substitute for sweetbreads.

4. American rabbit is the term applied to simple creamed cheese on toast.

5. Dried legumes are more or less rich in starch, hence add them to a very thin or a medium sauce; peanuts and soy beans are not so rich in starch as other legumes. Tomato sauce is especially desirable with lentils and kidney beans.

6. Peanuts have great food value, and as a rule they are very inexpensive.

7. Add either the nut meal or the nut butter to the liquid (usually milk or a white sauce), and simmer 3-5 min. Add salt, and pour the mixture over hot toast.

8. Since peanut meal or butter contains some starch, do not add it to a thick sauce; use the following special ingredients:

1 c. milk (if preferred, thicken this with a paste— $\frac{1}{2}$ tb. flour and $\frac{1}{2}$ tb. butter)

4 tb. peanut meal or butter (homemade or commercial)

Salt to taste (about $\frac{1}{4}$ t.)

WHITE SAUCES AND THEIR DERIVATIVES

Uses of White Sauces

(No set rules; many times the sauces are used interchangeably)

THIN SAUCE	MEDIUM SAUCE	THICK AND VERY THICK SAUCES
1. Used by many cooks as a foundation for cream soups; for example, see the third book of this series, <i>Diet for Children</i> . 2. Creamed toasts 3. Escalloped dishes Etc.	1. Meat and milk gravies 2. Escalloped dishes, such as macaroni 3. Basis for "custard" as used for cake fillings and ice-creams 4. Sauce for creamed foods, that is, for pouring over various foods, such as: Fish and meats Oysters and lobsters Toasts Vegetables, such as mushrooms Etc. Use $\frac{1}{2}$ -1 c. sauce to 1 c. food	1. Mixing of croquettes, such as chicken 2. Mixing of soufflés (a medium sauce, as well, is often used in soufflés) 3. Making of fillings for cream pies, such as date or lemon cream

Ingredients for White Sauces

SAUCE	MILK, CREAM, OR WHITE STOCK	FLOUR	BUTTER OR A SUBSTITUTE (See list of butter substitutes, page 176)	SALT	PEPPER (Such as paprika)
Thin	1 c.	1 tb.	0-1 tb.	$\frac{1}{4}$ t.	$\frac{1}{16}$ t.
Medium	1 c.	2 tb.	0-2 tb.	$\frac{1}{4}$ t.	$\frac{1}{16}$ t.
Thick	1 c.	3 tb.	0-3 tb.	$\frac{1}{4}$ t.	$\frac{1}{16}$ t.
Very thick	1 c.	4-6 tb.	0-3 tb.	$\frac{1}{4}$ t.	$\frac{1}{16}$ t.

Ingredients for White-Sauce Derivatives

SAUCE	LIQUID	FLOUR	BUTTER OR A SUBSTITUTE	SALT	PEPPER
Brown gravy or sauce (for use with meats and vegetables)	1 c. milk or water	1½ tb. browned flour	0-1 tb.	¼ t.	⅛ t.
Tomato sauce	1 c. tomato juice (or use part milk or water)	1-2tb.	0-2 tb.	¼ t.	⅛ t.
Drawn butter	1 c. hot water	1½ tb.	4 tb.	¼ t.	⅛ t.
Mustard sauce	½ c. very strong vinegar ½ c. water	2 tb. flour 3 tb. powdered mustard	0-1 tb. fat (such as oil)	1 t. salt 2 t. sugar	¼ t. white pepper

Notes:

1. The French chef always keeps on hand four meat and fish sauces—white, tomato, brown, and Béchamel; these he uses as bases for many other sauces.

2. To avoid curdling in making tomato sauce, a red (tomato) sauce should be cooked well first and then the milk added.

3. Two class recipes for medium sauce are as follows (white sauce results if milk is used):

3 tb. liquid; use one or any combination of the following: ¼ c. liquid

Milk, water, or stock

Tomatoes, strained

Etc.

1 t. flour

0-1 t. fat

⅛ t. salt

dash pepper

1½ t. flour

0-1½ t. fat

⅛ t. salt

dash pepper

POSSIBLE INGREDIENTS FOR WHITE SAUCES AND THEIR DERIVATIVES

White sauces and their derivatives are usually served hot. The following outline lists the ingredients for such sauces, including most hot-meat, fish, and vegetable sauces and gravies, as well as lemon and a few other pudding sauces.

I. Liquids:

Milk

Cream

Meat stock, white or brown

Vegetable juice, such as strained tomatoes

Vegetable stock

Fruit juice

Water

Notes:

1. Liquids may be used singly or in any combination.
2. A very white sauce results from using white or chicken stock, not milk, in "white" sauce.
3. Vegetable stock is the water in which vegetables have been boiled.
4. Fruit juice is used chiefly in sweet sauces for puddings.
5. Certain liquids, such as tomato juice, may be treated as follows:
 - a. Simmer liquid 5-15 min. with herbs, chopped vegetables, or other seasoning.
 - b. Strain, and proceed with the sauce.
6. If more than 2 c. liquid (milk in particular) is used in making a sauce, it is safer in order to prevent lumping and scorching, to cook the sauce in a double boiler; see application in Methods II and III, page 71. A similar rule holds for cream soups and all other liquid dishes consisting of milk thickened with starch.

II. Thickening agents:

Flour, white or browned
Cornstarch, arrowroot, or other powdered starch
Left-over cooked ground cereal (such as farina)
Egg yolks
Irish moss

Notes:

1. Thickening agents may be used singly or in any combination.
2. Flour is the usual thickening agent used. Browned flour does not thicken so much as white flour. On an average, $\frac{1}{2}$ tb. white flour and 1 tb. browned flour have the same thickening value. (Pupil to define dextrin.)
3. If cornstarch is used, cook sauce especially well so as to secure a velvety texture and to get rid of the raw taste.
4. If left-over cooked ground cereal is used, it should be substituted for part of the flour or cornstarch.
5. Irish moss and egg yolks are often of special use in invalids' diet.
6. If the flour or other starch is blended with fat before being added to the liquid, the resultant mass or ball of paste is called roux.
7. The three starch "blends" used in general cooking are:
 - a. Fat, used in sauces, soups, etc. (note use of roux)
 - b. A little cold liquid, used in sauces, cornstarch pudding, etc.
 - c. Dry ingredients, such as sugar, used in sweet sauces, cornstarch puddings, etc.

III. Fats:

Butter
Butter substitutes

Notes:

1. For list of butter substitutes, see Appendix, page 176. They are very desirable from the standpoint of economy, and almost any one of them may be used in making sauces for strongly flavored foods, such as finnan haddie. Drippings are sometimes desirable in sauces for creamed meats. Rendered suet is often especially valuable from the standpoint of economy.
2. In preparing salmon croquettes and other oily dishes, it is often advisable to omit all fat from the sauces.

IV. Seasonings and other additions:

Capers	
Cheese, grated	
Egg, hard-cooked, then sliced or chopped	
Egg, raw	
Herbs and spices	
Nutmeg	
Onion juice	
Pepper (such as paprika)	
Pickles	
Salt	
Sauces (such as mint and Worcestershire)	
Sugar, spice, lemon juice, etc.	
Vegetables, chopped, such as:	
Celery	Peppers, sweet green
Mushrooms	Parsley
Onions	Pimentos

Notes:

1. The raw egg may be used whole, or the white and yolk may be used separately. For example, snowflake sauce is made by folding 1 beaten white into 1 c. thin white sauce; yellow Béchamel sauce contains the yolk of egg.
2. Herbs and spices may be added to tomato sauce, etc.
3. A dash of nutmeg is sometimes added to white sauce.
4. Salt is essential in most sauces. When white sauce, cream soup, and other liquid dishes having milk as a basis are being prepared, the salt should be added at the last moment, or curdling is likely to occur. This rule is especially important when one is dealing with large quantities.
5. Sugar, spice, lemon juice, etc., are added as a rule to sweet sauces only.
6. If preferred, sauté the celery, mushrooms, onions, or peppers with a little of the fat required for the sauce.

THREE METHODS FOR WHITE SAUCES AND THEIR DERIVATIVES

(Flour selected as a typical thickening agent for use in all three methods)

I. Use of cold-liquid blend.

This is termed the *dietetic* method.

1. Mix flour with an equal amount of cold liquid to form a smooth, thin paste; the paste is really a thin batter, 1:1.
2. Scald the remainder of liquid in a double boiler; then, stirring constantly, gradually add the paste.
3. Cover the double boiler, and cook the mixture 10-30 min., according to the quantity; long cooking improves the flavor. Cook until well blended and creamy; stir often enough to prevent lumping. (With some sauces, and in case of emergency, it is possible to dispense with the use of the double boiler by boiling 1-3 min., or until creamy, over a direct flame, stirring constantly.)
4. Add fat and seasonings, such as salt and pepper, just before serving; it is sometimes convenient to allow the hot mixture to stand for a time before seasoning.

Notes:

1. This method is not so commonly used as Method II.
2. It is an economical method because the quantity of fat can be reduced to a minimum. The method is of particular value where little or no fat is used. Note the following points in regard to a white sauce containing no fat:
 - a. It can be made surprisingly good.
 - b. It must be carefully made or straining will be necessary.
 - c. A rich color can be obtained by the addition of a paste composed of egg yolk and cold water.
 - d. It bears some similarity to the recipes for both laundry starch and homemade library paste thickened with flour. Explain.
3. It is called the dietetic method for the following reasons:
 - a. Amount of fat can be controlled; excess of fat is likely to retard digestion.
 - b. Starch, as a rule, is more thoroughly cooked.
 - c. Fat is not cooked at all.
4. Sauces made by Method I are supposed to be more easily digested than those made by Method II. It is generally agreed that Method I is always the better one for children's and invalids' diets.

II. Use of melted-fat blend.

This is a simple method and the usual one for employing the fat blend; very nearly equal amounts of fat and flour are necessary.

1. Heat fat over a low direct flame or in a double boiler just enough to soften it, then remove at once from the fire. Avoid overheating the fat; for example, do not allow butter or butterine to "curdle."
2. Add flour and mix to form a very smooth paste. (Do not cook fat and flour together, because the temperature runs high and so harms the fat—for instance, injures the flavor of butter; if the paste is not allowed to brown, a *little* cooking may sometimes be permissible.)
3. Add a little of the liquid and stir to form a thin paste, then place over a low flame and stir constantly while adding the remainder of liquid in a thin, steady stream; the liquid added may be either cold or scalding hot.
4. Stirring constantly, cook over a low flame until thick, and finally let boil 1 min. or a little longer.
5. Add seasonings, such as salt and pepper, and serve.

III. Use of creamed-fat blend.

This method is used to a considerable extent.

1. Scald liquid.
2. Cream the fat and flour together to form a paste. At least $\frac{2}{3}$ as much fat as flour should be used if the sauce is to be smooth; if a richer sauce is desired, use equal amounts of fat and flour.
3. Add the paste to the hot liquid, and cook in either of the following ways:
 - a. Cook 5 min. over a direct flame; almost constant stirring required.
 - b. Cook 10 min., at least, in double boiler; constant stirring not required.
4. Add seasonings, such as salt and pepper, and serve.

COMPLETE-DISH SANDWICHES

Luncheon

Hot-meat sandwich

Sautéed carrots
Fruit cobbler

Bread and butter

HOT SANDWICHES CONTAINING MEAT OR OTHER PROTEIN FOOD

Prepare hot sandwiches from peanut butter or any of the other protein foods listed on page 48.

All hot sandwiches should be eaten with a knife and fork.

A few specific recipes are given below; both cheap and expensive foods are listed.

Hot-Meat Sandwich

Ingredients:

Bread, toast, or crackers

Hot meat, sliced or cubed, selected from the following:

Roast beef or veal

Roast veal or beef loaf

Roast mutton, lamb, or pork

Steak

Roast chicken

Etc.

Sauce, hot and well-seasoned, selected from the following:

Brown meat gravy

White sauce (see Note 2)

Tomato sauce

Etc.

Method:

1. Place meat and sauce between slices of bread or toast, or between crackers.
2. Pour sauce over the top of sandwich.
3. Garnish with parsley and dill pickle or olives, and serve hot.

Notes:

1. The following is a good class recipe for sauce:
 - 1½ t. browned flour
 - 1 t. fat
 - 4 tb. liquid (milk, water, or tomato pulp)
2. A white sauce made with milk or chicken stock is especially good with chicken.
3. Left-over meats ordinarily are used for hot-meat sandwiches.
4. A good substitute for hot-meat sandwich is prepared as follows:
 - a. Place a thin slice of boiled ham or tongue on a round slice of buttered toast.
 - b. Place a poached egg on the meat.
 - c. Add one of the following sauces:

Cream

Tomato

Curry

Hollandaise

Club Sandwich

This is a special and expensive type of meat sandwich; it is a toast sandwich arranged in layers. All the ingredients used in making the sandwich, except the toast and bacon, as a rule are cold.

Method:

1. Toast four triangular slices of bread and spread them, while they are still hot, with mayonnaise dressing.

2. Place lettuce hearts on two of these, then add the following layers:

Thin slices of the breast of cold, cooked chicken, such as roasted

Thin slices of broiled bacon or ham (sometimes served cold)

Slice of toast (hot)

3. Place the two sections side by side on a plate, or, if preferred, arrange the sandwich four slices deep of toast.

4. Garnish with any of the following:

Capers

Head-lettuce hearts

Parsley

Chili sauce

Mayonnaise

Pimentos

Dill pickles

Olives

Radishes

Notes:

1. The slices of bread may be cut in the shape of diamonds, triangles, squares, etc., before being toasted. Toast bread on one side or both sides, and spread with butter if desired.

2. Note possible additions to mayonnaise dressing:

Catsup

Peppers, sweet green or red, minced

Celery, minced

Pimentos, minced

Olives, minced

Etc.

3. Possible substitutes for white meat of chicken are as follows, the meat sometimes being minced rather than sliced:

Game

Slices of hard-cooked egg

Tongue

Sardines, skinned and boned

Turkey

Chicken meat other than the breast

Veal

Etc.

4. A slice of tomato may be put into the sandwich.

5. The garnishes listed are allowable in ordinary diet; serve a very *simple* toast to the aged and to invalids in general.

Hot Cheese Sandwich

(Especially good for picnics and chafing-dish parties)

Method:

1. Butter a thin slice of bread, using white, graham, whole-wheat, rye, or other bread; remove crusts, if preferred.

2. Put grated or sliced cheese on a second thin slice of bread.

3. Make a sandwich, cut it into two oblong strips, and brown slightly on both sides in any of the following ways:

Bake

Sauté in bacon fat, butter, or a substitute

Toast

Avoid a high flame, and do not cook after the cheese is melted. Why?

4. Garnish with parsley, and serve hot.

Notes:

1. Note substitutes for cheese in the sandwich: peanut butter, ham, sliced or deviled, a combination of cheese and ham, etc.

2. If preferred, make a mixture of the following, and dip the sandwich into it before baking or sautéing:

1 egg, slightly beaten

$\frac{1}{16}$ – $\frac{1}{8}$ t. salt

$\frac{1}{2}$ –1 c. milk or cream

Pepper

Sometimes it is well to roll the sandwich in cracker crumbs after dipping it in the egg mixture; then cook.

An excellent way to use left-over dry sandwiches of any kind is to dip them in the egg mixture, then bake or sauté.

French toast, prepared as follows, bears some similarity to a dipped sandwich:

- a. Dip slices of stale bread in the egg mixture given above; allow 4–6 slices to 1 egg.
- b. Sauté in bacon or other fat until slightly brown on both sides. Avoid a high flame. Why?
- c. Serve hot with sirup, butter, or jelly.

COMPLETE ESCALLOPED DISHES

Luncheon

Beef bouillon

Macaroni and cheese

Cress salad
Fresh fruit

Wafers
Bread and butter

Escalloped Macaroni and Cheese

(A complete dish)

Ingredients:

(5-6 servings)

1-2 t.	1 c. grated cheese (see Note 2)
2 tb.	2 c. boiled macaroni, 1" pieces (to boil macaroni, see page 49, Note 2)
	1 c. medium sauce:
1 t.	1-2 tb. butter or a substitute
1 t.	2 tb. flour
3 tb.	1 c. liquid—one or a combination of the following:
	Milk or cream Tomato pulp
	Stock or water Etc.
dash	½ t. salt
dash	⅛ t. paprika
	Buttered crumbs:
1 t.	½ c. dry crumbs
¼ t.	2 tb. melted butter

Method:

1. Place a layer of macaroni in a buttered baking dish and sprinkle with cheese.
2. Repeat putting in layers of macaroni and cheese.
3. Add sauce, then cover with buttered crumbs.
4. Bake 10-30 min., or until the cheese is melted and the crumbs are a golden brown.

Avoid too hot an oven, that is, do not allow mixture to boil, else the cheese is toughened.

Notes:

1. Escalloped dishes are dishes in which the ingredients are baked in layers.
2. A smaller quantity of cheese, for instance ¼-¾ c., may be used, if preferred; a "complete" dish does not result, however, if a minimum quantity of cheese is used.
3. For possible substitutes for (a) cheese, (b) macaroni, (c) sauce, and (d) seasonings in this recipe, see list, pages 48 ff., "Five Groups of Ingredients for Complete Dishes."

Almost any number of complete escalloped dishes can be prepared; average proportions for all such dishes are as follows:

1-2 t.	1 c. cooked protein food, chopped
2 tb.	2 c. cooked starchy food
3 tb.	1 c. sauce or other liquid
dash	Seasonings to taste (such as onion juice)
1 t.	$\frac{1}{2}$ c. buttered crumbs

4. The following is an average recipe for cheese sauce:

$\frac{1}{4}$ c. or more grated cheese

1 c. sauce:

1 c. milk or tomato pulp

1-3 tb. butter

1-4 tb. flour

Salt and pepper

A rich cheese is better in this recipe than a plain cheese; it melts more easily and is not tough. Why? A filled cheese is likely to become stringy in cooking. Add the cheese to the completed sauce, and stir in a double boiler until the cheese is melted. Avoid a high temperature or long cooking. Why?

Such a cheese sauce as the foregoing is useful in many "complete" and other dishes, such as the following:

a. Escalloped dishes:

Cereals (such as rice)

Crackers, soaked in milk

Eggs, hard-cooked, whole or sliced (curry a good addition)

Flour pastes (such as macaroni)

Vegetables (such as cabbage, cauliflower, and potatoes)

b. Creamed dishes which are not baked (to be served on toast or not, as preferred):

Eggs, hard-cooked and chopped

Fish or meat, chopped

Vegetables (such as cabbage or potatoes)

Escalloped Peanuts

(A complete dish)

1-2 c. chopped, roasted peanuts (or peanut butter)

2 c. cooked starchy food, selected from the following:

Hominy, macaroni, or rice

Cubes of cold boiled potatoes

Etc.

2 c. white sauce

$\frac{1}{2}$ c. buttered crumbs

Escalloped Fish

(A complete dish)

1 c. cooked fish, flaked

2 c. soft bread crumbs

1 c. white or tomato sauce

1-2 beaten eggs, if desired

Seasonings (such as salt and pepper, and minced onions or parsley)

$\frac{1}{2}$ c. buttered crumbs

Escalloped Oysters*(A complete dish)*

- 2 c. raw oysters
- 1 c. boiled macaroni
- 1 c. soft bread crumbs
- 1 c. white sauce
- Seasonings (such as salt, pepper, and grated cheese)
- ½ c. buttered crumbs

Noodles*(A good starchy foundation for complete dishes)***Ingredients:**

- | | |
|-------|---|
| 1 t. | 2 eggs, beaten slightly |
| ½ t. | 2 tb. cold water or cream |
| dash | ½ t. salt |
| 2 tb. | Bread flour enough to make a very stiff dough |

Method:

1. Add the dry to the wet ingredients and make the gluten elastic by kneading the dough 3-10 min., then roll until almost as thin as paper—to about ⅛" thickness; the more elastic the gluten, the thinner the dough can be rolled.
2. Allow the dough to dry for 10-60 min., or until just before it reaches the brittle stage; the sheet of dough may be hung on a line to dry, or may be covered with a towel and be left on the board. Beware of allowing the sheet of dough to become brittle; a brittle dough and a sticky soft dough are equally objectionable.
3. Cut into noodles by any of the three following methods, using a knife or a slicing machine sold for the purpose:
 - a. Roll tight on the order of a jelly roll, then cut in ⅛"-¼" slices; unroll by tossing lightly.
 - b. Cut dough into thin 3" strips, then place the strips on top of one another. Cut the pile crosswise in ⅛"-¼" slices, then shake apart.
 - c. Cut sheet in fancy shapes by means of cutters.
4. Dry the noodles, and pack for future use in covered glass jars; they keep well. If preferred, cook the noodles at once after cutting.

Notes:

1. Noodles boil tender in 3-20 min., according to the age of the noodles. Serve boiled noodles in any of the ways in which macaroni and other flour pastes are served:
 - a. Escallop with cheese or other protein food.
 - b. Cream them (heat in highly seasoned tomato sauce or in a white sauce containing cheese).
 - c. Serve in cream or meat soups.
 - d. Serve in place of potatoes (that is, as a vegetable).
 - e. Serve as a dessert (a good dessert consists of hot boiled noodles with hot apple sauce poured over them, and fried noodles as a garnish).

Cheese and tomatoes lend flavor to all of these tasteless flour pastes.

2. Strudel is a special noodle dough baked with apple, meat, or other filling; "complete" dishes sometimes result. Strudel differs from ordinary noodle dough in that the gluten in the dough is made very elastic by kneading and warmth; the dough is then stretched until almost as thin as tissue paper, dried, and rolled.

3. All flour pastes (stiff doughs, 4:1) are commercial products. Noodles are the only flour paste that, in addition to being a commercial product, can be made easily at home. (Pupil to determine whether or not homemade noodles are less expensive than commercial flour pastes.) Macaroni, spaghetti, and other wheat pastes are made by mixing hard-wheat flour and hot water into a stiff paste, which is then molded and dried; with the exception of noodles, they differ in size and form only. All flour pastes are rich in gluten; noodles differ from the other members of the group in that they contain eggs, and are therefore richer in protein. Buy cream-colored macaroni, etc., not white products. Why?

The following types, proportions, and method apply to complete as well as to all other escalloped dishes.

FIVE TYPES OF ESCALLOPED DISHES

I. Escalloped dishes (complete) in which both protein and starchy foods are characteristic ingredients:

Macaroni and cheese
Potatoes and cheese
Potatoes and peanuts

Rice and one of the following:
Cheese Lentils
Ham Peanuts

II. Escalloped dishes in which a protein food is the chief ingredient (see Note 2):

Cheese	Legumes (such as peanuts)
Eggs, hard-cooked	Meat of all kinds
Fish of all kinds (such as oysters or clams)	Nuts

III. Escalloped dishes in which starch is the chief ingredient:

Cereal (such as rice or hominy)
Flour paste (such as macaroni)
Potatoes (raw are better than cold cooked)
Etc.

IV. Escalloped dishes in which fresh juicy vegetables are used as the basis (see Note 3):

Cabbage	Corn
Cauliflower	Onions
Celery	Tomatoes

V. Sweet escalloped dishes, or those dishes in which fruits or other sweet materials are used:

Fruit (such as oranges, escalloped with soft custard)
Fruit escalloped with a starchy material, such as:
Bread crumbs
Rice or hominy
Tapioca or sago (apple tapioca, etc.)
Etc.

Notes:

1. All of the listed recipes (five types) offer fine opportunity for the use of left-overs; they are excellent dishes for supper or luncheon, and are good camp recipes, also.

2. White sauce or a substitute is used in most of the dishes in which a protein food is the chief ingredient.

3. Cheese is a good addition to the escalloped dishes in which fresh juicy vegetables form the basis. Escalloped rice and pumpkin is recommended by one cookbook.

4. In preparing any of the four following ingredients for use with any of the recipes, select materials (singly or in any combination) from those listed on pages 48 ff., "Five Groups of Ingredients for Complete Dishes":

- Protein food
- Starchy food or juicy vegetable
- Liquid
- Seasonings

All the recipes are very flexible; that is, the ingredients may be varied greatly as to type, form, and proportion; note the following possibilities:

- a. The recipes may be prepared from either raw or cooked foods. Meat or fish is usually cooked, but may be used in the raw state.
- b. Condensed milk is a possible substitute for white sauce.
- c. The solid foods employed may be used whole, sliced, chopped, or mashed, such as:
 - Cheese, grated or thinly sliced
 - Eggs (hard-cooked), whole, sliced, or chopped
 - Lentils, whole or mashed
 - Potatoes, sliced or mashed
- d. Buttered crumbs may be omitted.

5. Any of the food combinations mentioned under any of the five types may be served as creamed dishes, if preferred, rather than escalloped; mix the desired liquid with the solid ingredients and serve without baking.

GENERAL PROPORTIONS FOR ESCALLOPED DISHES

- 2-3 c. solid food (in addition to plain and buttered crumbs)
- 1 c. liquid, or enough to half or almost cover the other ingredients (see Notes 2, 3, and 4)
- Seasonings to taste (see Notes 5 and 6)
- Plain bread or cracker crumbs, to place between layers for thickening purposes
- Buttered bread or cracker crumbs for the top (about $\frac{1}{2}$ c.)

Notes:

1. Use these proportions for all five groups of escalloped dishes.
2. For liquid for unsweetened dishes select from the liquids listed on page 50, under "Five Groups of Ingredients for Complete Dishes." Medium sauces are used more often than thin sauces. Raw egg, chopped hard-cooked eggs, cheese, etc., are often *mixed* with a sauce before the latter is added to the dish; cheese is especially good with fresh vegetables.
3. For liquid for sweetened dishes, use soft custard, etc.
4. If the "solid food" used proves to be very juicy, as in the case of many fresh vegetables, add little or no liquid.
5. For seasonings for unsweetened dishes, select from the list on page 50. Bits of butter are also used as seasoning.
6. For flavorings for sweetened dishes, use a choice of the following:

- | | |
|-----------------|-------|
| Lemon juice | Sugar |
| Butter, bits of | Etc. |
| Spice | |

GENERAL METHOD FOR ESCALLOPED DISHES

1. Fill buttered ramekins or a large baking dish with alternate layers of (a) and (b); as a rule two or three layers of each are included in the recipe.

a. Chief solid ingredient, that is, the one used in the largest quantity

b. Remaining ingredients, except the buttered crumbs, added in any order desired:

Liquid

Seasonings

Crumbs for thickening

Etc.

2. Cover with buttered crumbs (see Note 4).

3. Bake 10-30 min., or until the dish is very hot throughout and brown on top; note that cheese and other protein foods are better if cooked at a low temperature.

4. Garnish with parsley.

Notes:

1. Use this method with all five groups of scalloped dishes.

2. If preferred, add all or nearly all of the liquid just before spreading the dish with buttered crumbs, rather than in successive quantities.

3. It often saves time to dispense with all "layers"; simply mix all the ingredients (except the buttered crumbs) in a bowl, then place in a baking dish, and cover with buttered crumbs. In the strict sense of the term, "escaloped" does not apply to the dishes made in this way.

4. Grated cheese is sometimes substituted for buttered crumbs, as in scalloped vegetable dishes. Note the evolution of meat pies, etc., from escalloped dishes by the substitution of pastry or baking-powder biscuit dough for buttered crumbs.

COMPLETE-DISH CROQUETTES

Luncheon

Macaroni and cheese croquettes

Stewed tomatoes

Brown bread sandwiches

Apple sauce

Cookies

Macaroni and Cheese Croquettes

(A complete dish)

Ingredients:

(10 croquettes)

1 t.	½ c. grated cheese (see Note 3)
2 tb.	2 c. boiled macaroni, minced or cut in ¼" pieces (to boil macaroni, see page 49, Note 2)
	½ c. very thick sauce (as thick as a drop batter), made from the following:
1½ t.	2 tb. flour
1 t.	1 tb. butter or a substitute
2 tb.	½ c. liquid—one or a suitable combination of the following:
	Milk or cream Tomato pulp
	Stock or water Etc.
dash	¼ t. salt
dash	⅛ t. paprika

Method:

Follow the general method for croquettes, page 84.

Notes:

1. One or more of the following ingredients may be added to this recipe:

Chopped ham, tongue, etc.

Yolks, beaten

Onion and other seasonings

2. Almost any number of complete-dish croquettes can be derived from this recipe by the use of different combinations of protein foods, starchy foods, liquids, and seasonings listed on pages 48 ff., "Five Groups of Ingredients for Complete Dishes." Chop fish, meat, and hard-cooked eggs before using. A protein filling, such as a frankfurter or a piece of one, may be hidden in the center of a croquette, if preferred.

3. A recipe for complete-dish croquettes becomes a meat substitute if protein material in excess of the given quantity is used. Also, such a recipe ceases to be complete if a minimum amount of protein material is used. Possible variations for croquettes include 1 tb.—1 c. protein food to 1 c. starchy material; thus some palates prefer the use of 1 tb.—½ c. cheese in the foregoing recipe for macaroni and cheese croquettes.

4. Note the following recipe for codfish balls, another complete dish. (Most croquettes are carefully molded by hand, not dropped or molded in the spoon as are codfish balls, a kind of dropped croquettes.)

Codfish Balls**Ingredients:**

(16-20 balls)

2 t.	1 c. raw salt codfish, washed, freed from bones, and shredded (measure after shredding)
1 tb., rounded	2 c. potato cubes ($\frac{1}{4}$ " cubes)
$\frac{1}{8}$ t.	2 t. butter
$1\frac{1}{4}$ t.	2 medium eggs, beaten very light
dash	$\frac{1}{8}$ t. pepper
	Salt, if necessary

Method:

1. Mix the fish and potatoes, cover with boiling water, and simmer until the potatoes are tender.
2. Drain mixture very dry, then mash and whip until light.
3. Add the other ingredients and beat the resultant "drop batter" very hard for 2-3 min. with a heavy wire egg-beater or a fork.
4. Shape in a tablespoon, slip into a basket, and fry to a medium brown in fat hot enough to brown a cube of bread in 40 sec. Fry but 4 or 5 balls at a time, and reheat fat each time. Why?
5. Drain on absorbent paper.
6. Serve with horseradish or other sauce.

Notes:

1. Secrets of success are as follows:
 - a. Thorough beating is necessary (plenty of air essential).
 - b. Balls look better if they are left rough on the outside.
 - c. Fat must be hot and in good condition: free from water, rancidity, and bad flavor due to other foods.
2. Raw fresh cod or any other fresh fish may be used in place of raw salt fish. Left-over cooked fish of any kind may be substituted for the raw fish.
3. Use the following method, if preferred:
 - a. Wash $1\frac{1}{2}$ c. shredded codfish, then simmer by itself until tender.
 - b. Add 2 c. mashed, unseasoned potatoes, preferably hot.
 - c. Add 2 t. butter, 2 large eggs beaten very light, and $\frac{1}{8}$ t. pepper.
 - d. Beat until very light, then drop by the teaspoonful into hot fat.

Any other cooked protein food, such as ground meat, may be substituted for fish.
4. Salt and smoked fish in general are a cheap source of protein; for example, salt cod-fish, salt herring (sometimes as cheap as \$0.02 per fish), or smoked finnan haddie.

Horseradish Sauce**Ingredients:**

- 3 tb. grated horseradish root
- 1 tb. vinegar
- Dash cayenne
- $\frac{1}{4}$ t. salt
- 4 tb. triple cream, whipped stiff

Method:

Mix the first four ingredients, then fold in the cream.

FOUR TYPES OF CROQUETTES

I. Croquettes (complete) in which both protein and starchy ingredients are used:

Macaroni and cheese	Rice and cheese
Rice and ham or other meat	Corn-meal mush and chicken

II. Croquettes in which a protein food is the chief ingredient:

FISH	MEAT	MISCELLANEOUS
Clams	Beef	Cheese
Lobsters	Chicken	Eggs, hard-cooked
Oysters	Sweetbreads	Legumes (such as peanuts or kidney beans)
Salmon	Veal	Nuts
Etc.	Etc.	

III. Croquettes in which a starchy material is the chief ingredient:

Cereal (such as hominy or rice)
 Flour paste (such as macaroni)
 Vegetable (such as potatoes)
 Etc.

*IV. Sweet croquettes, derived from plain starchy croquettes by addition of sweets to the latter.**Notes:*

1. The recipes offer good opportunity for the use of left-overs.
2. As a rule, all croquettes are prepared from ingredients which have been previously cooked and chopped or mashed. Cheese is grated before being used.
3. All croquette recipes are very flexible; that is, the ingredients may be varied very greatly both as to type and as to proportion.
4. Select materials (singly or in any combination) from those listed on pages 48 ff., "Five Groups of Ingredients for Complete Dishes," in preparing any of the four following ingredients for use with any of the types:

Protein food	Liquid
Starchy food	Seasonings

5. Croquettes of all four groups are often used as entrées.
6. Pupil to criticize the following menus:

<i>Dinner:</i>	Beef steak	Potato croquettes
	Boiled rice	Combination salad
	Stewed cherries	

<i>Luncheon:</i>	Lamb chops	Chicken croquettes
	Sautéed potatoes	Lettuce
	Watermelon	

<i>Luncheon:</i>	Baked noodles and cheese	Macaroni and ham croquettes
	Mashed potatoes	Sliced tomatoes
	Baked custard	

GENERAL METHOD FOR CROQUETTES

1. Mix all the ingredients, and if mixture is pulpy, whip with a fork until very light; some croquette mixtures, such as macaroni, are too coarse to whip to any extent.

2. Spread on a plate or platter and chill; if even then the mixture is too soft to mold, use one of the stiffening agents mentioned in Note 1.

3. Shape or mold into any of the following forms:

Cakes, round and flat	Pears
Chops	Pyramids
Cones	Spheres
Cylinders	Etc.

Be exact in workmanship, avoiding cracks on the outside of croquettes. Work with the mixture as soft as possible. Ideal croquettes are soft and creamy within. If preferred, place the croquette mixture in a shallow pan, chill, then cut into cubes or other forms; this is an excellent method for work with large quantities.

4. Roll croquettes in fine sifted crumbs; the crumbs absorb any moisture on the outside and form a rough coating to which the egg will cling. Corn meal occasionally is substituted for crumbs.

5. Form a fat-proof coating on the outside by dipping the croquettes into a slightly beaten mixture of egg and water; use 1 tb. milk or water to one egg. Be sure that the croquettes are perfectly coated. Why? (See Note 2.)

6. Roll croquettes in crumbs again.

7. Place in a frying basket, brown in deep fat, then drain on soft paper. Follow the general rule for all fried foods; that is, fry cooked mixtures in fat sufficiently hot to brown (golden) a small cube of very dry bread in 40 sec.; use the 60-sec. test with raw mixtures (see Note 3). What happens to the croquettes if the fat is too cool? If it is too hot? Beware of frying many croquettes at one time. Why?

8. Garnish with parsley and any of the following sauces:

Brown	Hollandaise	Tomato
Drawn butter	Tartar	White

Notes:

1. Stiffening or drying agents for croquette mixtures are as follows:

- Evaporation by cooking over a low flame; a better agent than (b).
- Addition of a few soft bread crumbs; such an addition is often made.

Caution: Croquettes should not be made tough by the use of an excess of crumbs or other material. Avoid cracker crumbs with all croquettes except on the outside.

Softening agents, if required, should be selected from the list of liquid materials in the table, page 50.

2. Dipping in egg and crumbs is necessary with croquettes not containing egg, such as most white-sauce croquettes. It is not necessary with croquettes containing much egg.

3. The temperature of the fat used for frying cooked mixtures should be 365-401° F., or 185-205° C.; for raw mixtures, 347-374° F., or 175-190° C.

GENERAL RULES FOR FRYING ANY FOOD

A. Safety precautions:

- I. Fry in a deep, heavy kettle. Why?
- II. Use either of the following methods for dealing with a blazing pan of fat:
 1. Exclude air by means of a tin or other cover for pan.
 2. Exclude air by covering blaze with sand.

Caution: Never pour water into blazing fat. Why?

B. Characteristics of a well-fried article:

- I. No taste or smell of the fat in which fried.
- II. Not greasy on the inside or outside; free enough from fat to leave very little or no grease spot on a napkin used for wrapping.

C. Reasons why an article may become soaked with grease in frying:

- I. Use of too little fat in the kettle. Frying requires enough fat to float the article. (A quart basin half full of fat can be used for frying by two or three pupils. As a safety precaution, turn out the gas before putting in the food, and do not relight until all frothing has ceased.)
- II. Use of too low a temperature. Be sure that the initial temperature of the fat is high enough and that this is maintained throughout the process. (The frying temperature, as well as the initial temperature used in broiling, is much higher than the temperature used in boiling foods.) Note that it is most important to retest fat each time before adding a fresh lot of any foods to be fried. Anything that cools the fat tends to make the food greasy. Note the following causes of the cooling of fat:
 1. Addition of water to the fat. The presence of water in fat is indicated by the bubbling of the fat. Fry in still fat, not bubbling fat. Avoid adding moist food to the fat; an article should be dry on the outside, although the inside may be as creamy as desired.
 2. Addition of too much food at one time.
 3. Addition of food that is too cold.
- III. Formation of an imperfect crust on the outside of the article. Causes of the imperfect crust are as follows:
 1. An incomplete fat-proof coating. All articles which do not contain egg in sufficient quantity should be rolled in fat-proof coating.
 2. Fat too cool to form a crust. The temperature of fat must be high enough to harden the egg at once into a coating which will prevent the absorption of fat; fat is not hot enough to crust over the outside of food so long as bubbles are seen in the fat.
 3. Presence of cracks on the outside of a croquette or other food.
- IV. Use of too much baking powder in the article to be fried. Explain.
- V. Use of too much fat in the article. Fat causes the food to break into bits during the frying.

VI. Improper draining of the article after frying. Note the following rules for draining:

1. Hold basket of fried articles over the hot fat until they are well drained. A wire egg-beater or a small sieve serves very well as a frying basket for use by each pupil.
2. Drain on paper immediately; use paper that is very absorbent, such as blotting paper, filter paper, or heavy unglazed meat paper.
3. Keep foods hot while they are draining.
4. Avoid heaping fried foods until after they are cold.

D. *Reasons for using a coating on a fried food:*

- I. To prevent absorption of fat. The coating should be uniform and without breaks.
- II. To serve as a drying agent; that is, to prevent the moisture of food from coming in contact with hot fat and thereby causing sputtering.
- III. To preserve shape of article.
- IV. To serve as a browning agent.

E. *Types of coating for fried foods:*

- I. Liquid.
 1. Batter, composed of egg, flour, etc.
 2. Slightly beaten egg mixed with a little cold water or milk; use 1 tb. liquid to 1 egg.
- II. Dry. (Except for sweet food the crumbs or other dry covering should be seasoned with a little salt and pepper.)
 1. Crumbs. These should be very crisp and dry; the fineness of crumbs is a matter of choice; for instance, crumbs are often sifted. Types of crumbs are given below:
 - a. Dried bread, brown or white (see page 172).
 - b. Cracker. These do not yield so rich a brown as bread crumbs. Also, they absorb fat more readily than bread crumbs.
 - c. Rolled corn or wheat flakes, ground shredded wheat, or other "ready-to-eat" cereals.
 2. Raw corn meal, farina, or other ground cereal.
 3. Grape nuts. These are good for use with fish.
 4. Raw flour, white, graham, or "browned."
- III. Combination of liquid and dry. That is, egg (liquid) is used with crumbs or any other of the dry coatings; it is more often used than either liquid or dry coatings by themselves. Directions to "egg and crumb" an article of food are as follows:
 1. Cool article, and roll in crumbs (crumbs furnish a rough surface to which the egg will cling).
 2. Roll in egg.
 3. Roll in crumbs.

F. Care of fat after frying:

- I. Cool fat a little and allow it to settle.
- II. Strain through a sieve lined with double cheesecloth (see Note 1).
- III. Wipe out the kettle with soft paper or a cloth.
- IV. Return fat to kettle and reheat fat so as to evaporate any water; heat until bubbling ceases and no "scum" of fine bubbles on top is visible. Water-soaked fat is of no use for frying.
- V. Cool fat, then store in a cold place until it is desired for further frying.

Notes:

1. If the fat contains much fine sediment, it is often necessary to use one of the following methods for clarifying:
 - a. Add boiling water to cold fat, stir well, let stand until cold, then scrape the sediment from the under side of the cake of fat formed on top of the water.
 - b. French-fry potatoes in the fat; the potato absorbs any foreign flavor or odor. (A part of the sediment forms as such in the bottom of the kettle; the remainder, which collects on the potatoes, should be brushed off before the latter are served.) Strain fat through a sieve lined with cheesecloth, then store.
2. Frying, if the following conditions are observed, is not an extravagant method of cooking:
 - a. Use the less expensive fats.
 - b. Use fat a number of times for frying; this can be done if the fat is properly cared for; keep it well strained, do not overheat it, and do not store it so long that it becomes rancid.
 - c. Make the fat into soap eventually.

COMPLETE-DISH LOAVES; RICE FOUNDATIONS

Dinner

Meat loaf

Buttered carrots

Snow pudding

Fried parsnips

Bread and butter

Steamed Loaf

Ingredients:

(8-10 servings)

1 tb.	1 c. ground or chopped protein food (such as cooked meat or fish)
1 tb. raw	1 c. raw rice (or about 3½ c. boiled rice) (see page 49 for possible substitutes)
1 t.	4 tb. cracker crumbs
1 t.	1 egg, beaten
to moisten	Hot water, milk, or stock to moisten filling so that it packs well; for example, 1-2 t. (see Note 1)
dash	½ t. salt
	Other seasonings to taste, such as:
dash	¼ t. paprika
dash	¼ t. celery salt
¼ t.	1 tb. chopped onion, sautéed in a little bacon fat
⅛ t.	1 t. chopped parsley
4 drops	½ t. lemon juice

Method:

1. Boil or steam rice until it is almost tender; salt the rice. See recipes, pages 92, 93.
2. Line a buttered mold with rice.
3. Mix the remaining ingredients and fill the cavity.
4. Cover meat with rice, pack, and steam 30 min.
5. Turn out on a platter and surround with tomato sauce made from the following ingredients:

2 tb.	2 c. strained tomato pulp
½ t.	3 tb. butter or bacon fat
¼ t.	1 tb. chopped onion (sautéed with the fat)
½ t.	4 tb. flour
dash	½ t. salt
dash	⅛ t. pepper

In preparing the sauce, use any of the three sauce methods, pages 70, 71.

6. Garnish with parsley and a few slices of hard-cooked egg cut in eighths.

Notes:

1. Many times no water, milk, or stock is needed in the recipe.
2. If preferred, arrange the rice and protein food in alternate layers rather than line the mold with rice, or mix them before putting them in the mold.
3. If one does not wish to take time for steaming the loaf, simply pour the protein-food mixture over the cooked rice, and serve.
4. If the filling consists chiefly of salmon, it is often desirable to change it as follows:
 - a. Add 2 tb., instead of $\frac{1}{2}$ t., lemon juice.
 - b. Add 1-3 t. curry powder to rice.
 - c. Serve with drawn-butter sauce rather than tomato sauce.
5. A simple dessert can be made by substituting fruit for protein food, and sugar, etc. for the various seasonings in the recipe.
6. Steamed rice-balls (see the third book of this series, *Diet for Children*) are closely related to steamed complete-dish loaf.

Baked Loaf (Complete)**Ingredients:**

(8-10 servings)

$\frac{1}{2}$ tb.	1 c. ground protein food (such as meat, fish, or mashed legumes)
2 tb.	4 c. soft stale bread crumbs (coarse) or other starchy ingredient, packed solid in cup
$\frac{3}{4}$ t.	2 eggs, beaten
$\frac{1}{8}$ t.	4 t. butter or a substitute, melted
1-2 t.	Milk or other liquid, enough to moisten to the consistency of drop-biscuit dough
dash	1 t. salt
	Other seasonings to taste, such as:
dash	$\frac{1}{2}$ t. pepper
$\frac{1}{4}$ t.	2 tb. chopped onion
dash	1-2 t. powdered herbs

Method:

Follow the method for baked loaf, page 90, or steam the loaf, if preferred.

Note:

Place the class recipe in a very small baking-powder can (sample size), cover tight, and bake about 30 min.; if twice the amount of the class recipe is used, bake in a custard cup.

Baked Loaf (Incomplete)

(A complete dish only when served with rice, potatoes, etc.)

Ingredients:

(5-6 servings)

1 tb.	1 c. ground meat or fish or mashed legumes
1 tb.	1 c. soft bread crumbs or other starchy ingredient
$\frac{1}{2}$ t.	1 egg, beaten
$\frac{1}{4}$ t.	2 t. butter or a substitute, melted
1 tb. (about)	Milk or other liquid, enough to moisten to the consistency of drop- biscuit dough
dash	1 t. salt
dash	$\frac{1}{4}$ t. paprika
$\frac{1}{8}$ t. sage	Other seasonings to taste (such as sage)

Method:

1. Mix all the ingredients.
2. Pack solid in a well-buttered mold, such as a bread tin, and smooth the top surface.
3. Bake or steam 1 hr., or until firm throughout; test with a silver knife. (Allow $1\frac{1}{2}$ -2 hr. for a 2-lb. loaf.)
4. Turn out and serve with tomato, white, egg, or other sauce. Garnish with parsley, lemon, and hard-cooked eggs sliced thin or pressed through a ricer.
5. Carve in thin slices.

Notes:

1. The object in baking is to keep the loaf from drying out, hence:
 - a. Submit loaf to a high oven temperature, 482° F., or 250° C., for a few min. only—long enough to sear.
 - b. Bake with a reduced oven temperature, 354°-356° F., or 175°-180° C., for remainder of time, or until internal temperature of the loaf is 150° F., or 65° C.
 - c. Keep pan covered so as to retain all steam. (If pan is not covered, baste the loaf often with a mixture of fat and water.)

Note that the foregoing rules as to temperature, etc., are similar to those for an ordinary meat roast.

2. If desired, line mold with cooked rice, add loaf mixture, and cover with rice; this produces a "complete" dish.
3. Note the following suggestions as to the class recipe:
 - a. Steam salmon loaf 15-20 min., or until firm.
 - b. Bake or steam meat loaf 25-30 min. (use raw Hamburg steak for class exercise).
 - c. Use a very small baking-powder can (sample size) or a custard cup for baking.

GENERAL NOTES ON MEAT OR OTHER PROTEIN-FOOD LOAVES

These notes apply to both types of loaf: (a) complete dish; (b) not a complete dish.

1. Both types of protein-food loaf may be baked or steamed.
2. If either type is baked or steamed in very small molds called timbales, the products are called timbales. Beaten white of egg, folded into the mixture before it is cooked, often improves timbales.
3. In preparing protein food, starchy food, liquid, and seasonings for use in either type of loaf, select from the list, pages 48 ff., "Five Groups of Ingredients for Complete Dishes." Select the protein foods singly or in any combination; likewise the starchy foods, liquid, and seasonings.
4. The starchy material of a protein-food loaf usually consists of soft stale bread crumbs, but the following substitutes may be used:

Cereal, cooked (such as rice or hominy)	Potatoes, riced or mashed
Crackers	Stuffing from baked fish, fowl, or meat
Flour paste, cooked (such as spaghetti)	

5. Seasonings may be selected from the following:

Bacon, chopped	Herbs (such as sage and thyme)
Cheese, grated	Lemon juice
Greens, cooked, such as spinach or beet tops (a good loaf is made of cheese, spinach, and crumbs)	Pork, chopped fat salt (often substituted for butter in protein-food loaf)
	Tomato pulp, etc.

6. Note the following suggestions as to protein foods for use in either type of loaf:
- a. Raw meat is generally used; cooked meat is used only occasionally. With cooked meat the time required to bake the loaf is much reduced; sometimes the loaf is not baked at all, especially if a little gelatin is added.
 - b. Remove all oil, cartilage, and bone from meat and fish.
 - c. Cooked fish is used more often than raw fish.
 - d. Either grated cheese or chopped hard-cooked eggs may be combined with coarse bread crumbs or other starchy material in making a loaf.
 - e. Mashed cooked legumes are often used, such as lentils. A loaf made from a combination of beans (kidney, navy, or lima), cheese, bread crumbs, pimentos, etc., is especially good.
 - f. Nuts (chopped or ground) are often used, such as English walnuts and roasted peanuts. Nut loaves are especially attractive baked in sausage-like forms. A good loaf is prepared from nut meal, cheese, and bread crumbs.

RICE

I. *Types of rice:*

Natural rice:

- a. Polished; white or light cream in color.
- b. Unpolished or "brown"; light tan in color, and a more valuable food than the polished. Why?

Dextrinized or toasted rice; this is prepared by heating dry natural rice in a sautéing pan or in the oven.

II. *Three methods for cooking either natural or dextrinized rice:*

Boiling

Cooking in a double boiler

Steaming

III. *Three methods for serving either natural or dextrinized rice:*

Breakfast food

Vegetable, that is, as a potato substitute (good served with brown gravy)

Dessert

Natural rice, cooked by any of the three methods (see II), is good molded as a dessert. Which of the three methods results in the poorest mold? Why?

IV. *Characteristics of well-cooked rice:*

Dryness

Separateness of all the kernels

Tenderness

Whiteness, in the case of polished rice

V. *Suggestions for the use of cooked rice, natural or dextrinized:*

Complete-dish series (rice is the starchy element)

Rice croquettes

Desserts:

Rice pudding

Rice-balls

Escalloped rice with fruit

Etc.

The following recipes are for use with natural rather than dextrinized rice.

Washing Rice

Method:

1. Pick over rice.
2. Place in a wire strainer, and shake up and down in successive quantities of cold water until the last water is clear; or place in a strainer over a bowl and rub between the hands.

Note:

Too much washing of the natural rice results in the removal of the water-soluble vitamins.

Boiled Rice

Ingredients:

1 h. tb.	1 c. raw rice, well washed
1½ c.	3-6 qt. very rapidly boiling water
¼ t.	1 tb. salt

Method:

1. Sprinkle the rice slowly into the boiling salted water, being careful not to stop the motion of the water.
2. Boil the rice until tender, 10-30 min., according to the age of the rice; test for tenderness by tasting or by crushing the grains between the fingers.
3. Drain through a colander and wash with hot water.
4. Dry in the oven.

Notes:

1. The water from boiled rice can be utilized as a thickening or binding agent for soups, sauces, meat loaf, etc.

Experiment: Boil down a little of the water to ¼ its original volume, cool, and observe results. Test a little of the water with iodine.

2. One good way to prepare rice is to simmer it 15 min., then bake 15 min. in a hot oven.

3. The kernels in properly boiled or steamed rice are always separate; the methods for keeping the kernels separate in boiling are as follows:

WATER

RICE

- | | |
|--|--|
| <ol style="list-style-type: none"> a. Keep a quantity of water on the rice, the more the better; thus in the foregoing recipe 5-6 qt. are better than 3 qt. water. b. Have water in violent agitation when rice is put in. c. Keep water boiling violently. | <ol style="list-style-type: none"> a. Wash raw rice. b. Drop rice into water very slowly. c. Stir as little as possible; when stirring is necessary, use a fork, not a spoon, so as not to crush the kernels. d. Do not cook too long. e. Drain well and wash with clear water. f. Dry 2-5 min. in a hot oven; it is well, while rice is in oven, to shake or to toss it about with a fork so that the steam can escape. If preferred, place rice in a strainer and dry over a direct flame. |
|--|--|

Rice Cooked in a Double Boiler

Ingredients:

- 1 c. raw rice, well washed
- 4 c. boiling water, or a little less if rice is not very dry
- 1 t. salt

Method:

1. Add the rice to the boiling salted water and boil 4-6 min.; stir often with a fork.
2. Place the mixture in a double boiler and cook until the rice is tender.
3. If rice is at all moist, dry in oven before serving.

Notes:

1. If preferred, perform step 1, then place the rice in a fireless cooker and cook 2 hr., or until tender.
2. Any of the following liquids may be substituted for water in the foregoing recipe; these liquids are also good for use with dextrinized rice:
 - Milk, or half milk and half water
 - Meat stock
 - Strained tomatoes and water or stock, as in Turkish pilafWhich of the above-named liquids may be used in boiling rice?
3. Rice cooked in a double boiler (much whiter than boiled rice) is often served as a breakfast cereal; the kernels do not keep separate, and the rice is more moist than either boiled or steamed rice.

Steamed Rice

(Recipe not used very frequently)

Ingredients:

- 1 c. rice, measured *after* being treated as follows:
 - a. Wash, then parboil 5 min. in a quantity of water.
 - b. Drain, and rinse.
- 2 c. boiling water
- 1 t. salt

Method:

1. Mix all the ingredients and place them in a buttered baking dish.
2. Cook 45 min., or until the rice is tender, in a regular steamer or a "steam cooker"; or if preferred, place the parboiled rice in a greased sieve, and steam over boiling water.

Note:

On the whole, steamed rice is preferable to boiled rice; the advantages of steamed rice over boiled rice are as follows:

- Kernels more distinct as a rule
 - Less loss of starch and mineral matter
 - Kernels much whiter in the case of polished rice
- Boiled rice has one great advantage in that it cooks much more quickly.

Luncheon

Steamed beef and rice loaf

Mashed squash

Bread and butter

Floating Island

Tomato sauce

Lettuce with French dressing

Tea

Class to serve the menu to a group of ten teachers or pupils at a minimum cost per plate; vary the menu, if preferred.

Cost of Supplies
(Pupil to supply data)

SUPPLIES	QUANTITY	COST
Beef.....
Bread
Butter
Coffee
Cream
Eggs
Lettuce.....
Milk
Oil
Squash
Rice
Seasonings.....
Sugar (granulated and loaf)
Tea
Tomatoes
.....
.....
Total

COMPLETE-DISH DRIED-LEGUME STEWS

Dinner

Lentil stew

Mock mincemeat pie

Corn cake

Lentil Stew

(6-8 servings)

Ingredients:

1 tb. cooked lentils	½ c. dry lentils
1 t.	1 c. chopped celery, stalk or root
1 t.	¼ c. chopped onion
to cover	Water or stock to cover vegetables
1 h. tb.	1 c. potato cubes (½" cubes)
	Thick brown gravy made from the following (see Note 1):
1½ t.	½ c. very brown flour
½ t.	4 tb. butter or bacon fat
3 tb.	1½ c. water, milk, or stock
dash	¾-1 t. salt
dash	½ t. paprika
¼ frankfurter	4 frankfurters, each 5" long
2 tb.	1 c. tomatoes

Method:

1. Pick over and wash the lentils.
2. Soak them over night in cold water to cover, then drain. (About 1¼ c. soaked lentils result from ½ c. dry ones.)
3. Add the celery and onions, add water to cover, and simmer 1-3 hr., or until the three vegetables are tender. Twenty minutes before these three vegetables are tender, add the potatoes; keep mixture well covered with water. Five minutes before serving add the brown gravy and seasonings. At the last add frankfurters (cut in 1" pieces after the skins are removed) and tomatoes, boil 2-3 min., and serve.

Notes:

1. In preparing the gravy, use any of the three sauce methods, pages 70, 71.
2. Cook the stew over night in a fireless cooker, if preferred.
3. Lentil soup is made by thinning the lentil stew with water or stock.
4. One may alter the proportions in this recipe as desired, inasmuch as all recipes for stews are very flexible; various additions and deductions of ingredients may be made. Note the following possible additions:

Left-over meats, ham bones, etc.
 Horseradish sauce
 Bacon ends or salt pork

Celery salt
 Parsley
 Sweet green pepper

Additional flavor is obtained by browning bacon with chopped celery, green pepper, and onion. For further suggestions as to seasonings, see list, page 50, under "Five Groups of Ingredients for Complete Dishes."

5. Note possible substitutes for lentils in recipe:

Dried beans of all kinds (kidney beans are particularly good)

Dried peas, split or whole

Raw peanuts

Canned legumes, such as lentils or kidney beans, may be used in this recipe; likewise left-over baked beans.

6. "To build up the tissues, a cheap form of protein is that contained in peas or beans, while eggs are eight times as expensive, and beef five times as expensive at ordinary prices."¹ Note that abnormal prices exist at times; for example, lentils (imported), formerly \$0.10 per lb., advanced in time of war to \$0.25 per lb.

¹ Bailey, *Sanitary and Applied Chemistry*, page 368.

COMPLETE-DISH FISH STEWS

Luncheon

Fish chowder

Radish salad

Crackers

Brown-bread sandwiches

Apple Betty

Fish Chowder

Ingredients:

(4 servings)

1 lb. | ½ lb. any firm fish, white in color, cut in ½" cubes, such as one of the following:

Bass

Haddock

Cod, fresh

White fish

1 lb.	1 c. potatoes cut in $\frac{1}{2}$ " cubes
-------	--

1 tb.	$\frac{1}{2}$ c. scalded milk
-------	-------------------------------

Seasonings:

2 tb.	$\frac{1}{4}$ -1 c. tomatoes, strained
-------	--

$\frac{1}{4}$ " cube	1" cube fat salt pork
----------------------	-----------------------

1/2 t.	2 tb. onion, chopped
--------	----------------------

$\frac{1}{4}$ t.	$\frac{1}{2}$ tb. butter
------------------	--------------------------

dash Salt

dash Cay

1/2 cracker	2-6 crackers, each 2" in diameter
-------------	-----------------------------------

Method:

1. Sauté pork and onion together.

2. Add potatoes and water to cover and boil 10-15 min., or until potatoes are almost tender. (Why do the potatoes require a longer period for cooking than the fish?)

3. Add the fish, and simmer about 10 min., or until the fish is tender.

4. Add all the other ingredients, scald, and serve at once.

Notes :

1. Seasonings may be selected from the following, according to taste:

Bay leaf

Parsley

Curry powder

Vegetables (such as carrots)

Herbs

Worcestershire sauce

Lemon juice

Etc.

For additional suggestions, see list, page 50, under "Five Groups of Ingredients for Complete Dishes."

2. Strained tomatoes (in addition to the $\frac{1}{4}$ -1 c. tomatoes) may be substituted for milk in this recipe.

3. Either flour or beaten egg, in place of crackers, may be used as a thickening agent.
4. Clams may be substituted for fish in this recipe, or the recipe for clam chowder, given below, may be used.
5. Note two types of chowders:
 - a. Those composed chiefly of carbohydrate material (such as corn or potato chowder)
 - b. Those composed of both protein and carbohydrate material (such as clam, lobster, or white-fish chowder)
6. Chowders are stews, not soups; therefore avoid much liquid.

Clam Chowder

Ingredients:

(4 servings)

- $\frac{3}{8}$ c. minced clams, canned or fresh
- 1 c. $\frac{1}{2}$ " potato cubes or $\frac{1}{4}$ " slices
- 1 c. scalded milk

Seasonings:

- 1" cube fat salt pork
- 2 t. onion, chopped
- 1 tb. butter
- $\frac{1}{4}$ t. salt
- $\frac{1}{8}$ t. paprika
- $\frac{1}{8}$ c. clam liquor
- 2 crackers, each $2\frac{1}{2}$ " square

Method:

1. Sauté pork and onion together.
2. Add potatoes with water to cover and boil until potatoes are tender.
3. Remove the pork, add all the other ingredients, bring them just to the boiling point, and serve at once.

Note:

Compare the food value of this recipe with that of an ordinary recipe for oyster stew.

COMPLETE-DISH TURNOVERS

Luncheon

Meat turnovers

Boiled cabbage

Sautéed parsnips

Bread and butter

Lemon ice

Meat Turnovers

Ingredients:

(Eight 6" turnovers)

Dough—either of the following doughs:

Pie-crust dough (see method, page 103):

2 c. pastry flour

$\frac{3}{8}$ t. salt

$\frac{1}{8}$ – $\frac{3}{8}$ c. lard or a substitute

$\frac{1}{2}$ c. cold water, or a little less

Biscuit dough (see method, page 103):

2 c. pastry flour (see Note 6)

$\frac{1}{2}$ t. salt

4 t. baking powder

2–4 tb. butter or a substitute

$\frac{3}{8}$ c. cold water or milk

Meat filling (see Note 1):

5 tb. browned flour (golden)

$\frac{1}{2}$ t. salt

$\frac{1}{4}$ t. paprika

1 c. milk

2 c. ground cooked meat

2 tb.

dash

$\frac{1}{2}$ tb.

$\frac{3}{4}$ t.

2 tb.

dash

$\frac{1}{4}$ t.

$\frac{1}{2}$ – $\frac{3}{4}$ t.

1 t.

1 t.

$\frac{1}{16}$ t.

$\frac{1}{32}$ t.

$1\frac{1}{2}$ tb.

$1\frac{1}{2}$ tb.

Method:

1. Prepare the meat filling as follows:

a. Mix the dry ingredients.

b. Slowly add the milk to make a smooth paste, stir over the fire until thick and creamy, then add the meat.

2. Roll the dough to $\frac{1}{4}$ " thickness and cut into 6" squares (or circles).

3. In the center of each square place a large spoonful of meat filling.

4. Form a square casing by folding the corners into the center; moisten edges and press together, leaving a dent in the center.

5. Bake 15–30 min. in a hot oven; allow longer for pie crust than for biscuit dough.

6. Serve with a hot sauce, such as brown or tomato sauce.

Notes:

1. Vary the filling as desired; select from the lists of protein foods, liquids, and seasonings given on pages 48ff., "Five Groups of Ingredients for Complete Dishes." In general, cooked meat and fish are used, not raw. Either cottage cheese or grated American cheese may be substituted for meat by mixing either one with two-thirds as much thick white sauce as cheese. In the class recipe for one turnover, use 2 tb. of either cheese; 2 tb. chopped almonds also make an excellent turnover. A little mashed potato, or cooked cereal, such as rice, is sometimes added to any protein-food filling.

2. The turnovers turn a very pretty brown if brushed with yolk of egg before being placed in the oven.

3. If preferred, make 2-3 large turnovers, instead of 8 small ones, from this recipe.

4. A small "roll" is made as follows, a large roll being made in a similar way:

a. Mold a stiff protein-food filling into a roll about the size of the finger.

b. Cut pie-crust dough into a strip, fold about the roll, and bake in a hot oven.

5. Sweet turnovers, used as desserts, can be derived from the recipe for meat turnovers by substituting fruit for the meat filling.

6. See list of wheat-flour substitutes, Appendix A, page 165.

COMPLETE-DISH PIES

Luncheon

Meat pie
Lettuce

Buttered carrots
Bread and butter

Bread pudding

Meat Pie

This recipe is merely a general one; all expensive ingredients *may* be omitted.

Method:

1. Remove all bones, gristle, and excess fat from left-over meat, such as stewed or roasted meat. This meat may include any cheap or expensive cut of meat, such as beef, veal, mutton, pork, or chicken, used singly or in any combination.

2. Cut meat into $\frac{1}{2}$ "-1" cubes or thin slices; if preferred, cut the meat into larger pieces, as in the case of chicken. Avoid cutting meat or vegetables as fine as for hash.

3. If desired, mix meat with cooked vegetables cut into $\frac{1}{2}$ "-1" cubes, such as carrots, turnips, and potatoes; vegetables are not essential.

4. Place in a deep baking dish and almost cover with a medium thick sauce; use any left-over meat gravy, or make up a sauce as follows:

$\frac{1}{2}$ t.	2 tb. butter or a substitute
1 t.	2 tb. flour
3 tb.	1 c. liquid; use one or a combination of the following:
	Milk, cream, or water Tomatoes, strained
	Meat stock or liquor Etc.

5. Season well with any of the following:

Celery salt	Pepper (such as paprika)
Herbs, dried	Pepper, sweet green, minced
Mushrooms	Salt
Onion, minced	Tomatoes, sliced or strained
Oysters	Etc.

6. Add a layer $\frac{1}{2}$ "-1" deep of any of the starchy "covers," page 102. If plain pastry or biscuit dough is used, make openings in it for the escape of steam.

7. If desired, cover with a browning agent, such as beaten egg or buttered crumbs. Buttered crumbs are essential with macaroni or other flour paste, not only as a browning agent, but as a means of preventing the drying up of the paste.

8. Bake 20-30 min., or until brown and hot throughout.

Notes:

1. Individual pies or patties may be prepared, if preferred.
2. The sides of the dish may be lined with dough, if desired.
3. See pages 48ff., "Five Groups of Ingredients for Complete Dishes," for further suggestions as to each of the following:

Vegetables

Liquid

Seasonings

4. Various protein foods may be substituted for meat in this recipe; for example, note that good complete-dish pies can be made from fish; select from the meat-substitutes listed on page 48.

5. Pies may be prepared as follows from raw meat and vegetables:

- a. Place meat and vegetables in a baking dish, cover, and bake until nearly tender.
- b. Remove cover of dish, add crust, and bake until crust is done.

A pie prepared from raw meat requires longer cooking than the same sized pie prepared from cooked meat. Increase the time for cooking according to any increase in the size of the pie.

Discuss the question of possible food-poisoning from raw-meat pies.

STARCHY COVERS OR TOP CRUSTS FOR COMPLETE-DISH PIES

The following varieties of covers or crusts may be used:

Cereal, cooked (such as rice or hominy)

Flour pastes, cooked (such as macaroni)

Soft stale bread crumbs

Mashed potatoes

Plain pastry

Puff paste

Baking-powder biscuit dough (see Note 3)

Notes:

1. Chicken fat is good for use in crusts for chicken pie.
2. Two tb. cooked rice, macaroni or other flour paste is sufficient for one custard cup.
3. See Appendix A, pages 165, 166, for a list of wheat-flour substitutes for use in biscuits, etc.
4. Puff paste is a very rich, flaky pastry. It is expensive, but good, especially with chicken. The class recipe, given on page 103, is sufficient for two custard cups.
5. Each of the other class recipes given on page 103 is sufficient for but one custard cup.

Mashed Potatoes

Ingredients:

2 tb.	2 c. mashed potatoes
½ t.	2 t. baking powder
¾ t.	1-3 tb. fat
dash	½ t. salt
dash	¼ t. white pepper
¾ t.	Hot milk or cream to moisten; use 4 tb. or more

Plain Pastry**Ingredients:**

2 tb.	2 c. pastry flour
dash	$\frac{3}{8}$ t. salt
$\frac{1}{2}$ tb.	$\frac{1}{2}$ - $\frac{3}{8}$ c. fat
$\frac{3}{4}$ t.	$\frac{1}{8}$ - $\frac{1}{2}$ c. water

Method:

1. Mix the dry ingredients.
2. Chop in the fat by means of two knives.
3. Add the water, and with as little mixing as possible make into a dough.

Puff Paste**Ingredients:**

4 tb. pastry flour	$1\frac{1}{2}$ c. bread flour, sifted once
$1\frac{1}{2}$ -2 tb.	1 c. butter (washed), butterine, or chicken fat
1 tb.	Ice-water

Method:

See any standard cookbook.

Baking-Powder Biscuit Dough**Ingredients:**

2 tb.	2 c. pastry flour
$\frac{1}{4}$ t.	4 t. baking powder
dash	$\frac{1}{2}$ t. salt
$\frac{3}{4}$ t.	2-4 tb. butter or a substitute
$1-1\frac{1}{2}$ t.	$\frac{3}{8}$ c. milk or water for a molded dough (use more liquid for a drop dough)

Method:

1. Sift the dry ingredients together two or three times.
2. Chop in the fat.
3. Add the liquid, and with as little mixing as possible make into a dough.

Note:

An excellent cover is derived from this recipe by chopping in mashed potatoes at the same time with the fat, using the following ingredients:

2 tb.	2 c. pastry flour
$\frac{1}{4}$ t.	4 t. baking powder
dash	$\frac{1}{2}$ t. salt
$\frac{1}{2}$ tb.	$\frac{1}{2}$ c. fat
1 tb.	1 c. cold mashed potatoes, white or sweet (very dry)
$\frac{1}{4}$ -1 t.	Milk for a soft dough (about 1-4 tb.)

Dinner

Meat pie

Buttered carrots

Sautéed tomatoes

Bread and butter

Caramel ice cream

Class to serve the menu to a group of ten teachers or pupils at a minimum cost per plate; vary the menu, if preferred.

Cost of Supplies*(Pupil to supply data)*

SUPPLIES	QUANTITY	COST
Meat.....		
Potatoes (for crust)		
Turnips.....		
Tomatoes.....		
Carrots.....		
Bread		
Butter.....		
Milk		
Eggs		
Sugar		
Total		

PART IV
COOKING OF THE CHEAPER MEAT CUTS

SUGGESTIONS FOR LESSONS

MEAT STEWS

- 28. Beef stew with dumplings
- 29. Choice of the following stews: lambs' kidneys, liver and bacon, tripe rolls

BRAISED MEATS

- 30. Beef, either kettle-braised or oven-braised

MEATS COOKED WITH ACIDS

- 31. Sour beef, baked. Stuffed baked potatoes

BROILED MEAT BALLS

- 32. Meat balls prepared from raw meat. Brown gravy

PROTEIN-FOOD CROQUETTES

- 33. Meat croquettes

MEAT STOCK

- 34. Soup stock

INTRODUCTION

TOUGHER MEAT CUTS AS A SOURCE OF ECONOMY

Three chief points are to be considered with regard to the digestibility of meat; palatability may have more or less influence with respect to some of them. These three points are:

- I. *Ease of digestion.*
- II. *Length of time food stays in stomach* (a less important point).
- III. *Ultimate digestibility* (by far the most important point of all).

The vital fact to be emphasized is this: *The ultimate quantity of meat digested is about the same*, no matter what the:

1. Animal
2. Cut (tough or tender)
3. Method of cooking

"The most extended scientific work on the cooking of meats has been carried on at the University of Illinois. At that institution Professor H. S. Grindley, with a corps of able assistants, has been working since 1904 on some of the problems of cooking meat. . . .

"The work of Professor Grindley indicates that the digestibility of meat is not dependent upon the cut of meat. He finds that a cut of meat from the shoulder digests about as readily and completely as one from the loin, the differences in digestibility being too small to be considered. He also finds that the method of cooking has little effect on the nutritive value of the meat. He says, 'In general the various methods of cooking materially modify the appearance, texture, and flavor of the meat, and hence its palatability, but have little effect on the total nutritive value.'

"If this be true, then one may choose a cut of meat from any place in the animal he wishes and cook it as he pleases, and yet in the end have meat that is equally nutritive and digestible, if its composition is the same to begin with."¹

Note:

The following are valuable bulletins on meats:

Bulletin 158, University of Illinois Agr. Exp. Sta., "Relative Economy, Composition and Nutritive Value of the Various Cuts of Beef."

Circular 206, University of Illinois Agr. Exp. Sta., "Essentials in the Selection of Beef."

Circular 71, University of Illinois Agr. Exp. Sta., "Roasting of Beef."

Bulletin 162, U.S. Dept. of Agr., Office of Exp. Sta., "The Influence of Cooking upon the Nutritive Value of Meats."

Bulletin 193, U.S. Dept. of Agr., Office of Exp. Sta., "Effect of Cooking upon Digestion of Meat."

¹Flora H. Greene, "The Amount of Edible Meat in the Various Cuts," *Journal of Home Economics*, October, 1910, page 423.

THE USES OF TOUGH OR CHEAP MEATS

I. Uses of chopped meat, including fresh meat and left-over cooked meat:

Creamed meat on toast	Mince meat
Hash	Sandwiches containing raw or cooked meat
Meat balls, sautéed	Soufflés
Meat croquettes, fried	Tamales
Meat loaf	Turnovers and rolls, baked
Meat roll (large), braised	Etc.

II. Uses of meat left in medium-sized pieces:

Meat pies	Stews
Soup	Etc.

III. Uses of meat left in large pieces:

- Braised meat
- Steamed meat (meat placed in a perforated steamer over boiling water or in a "steam cooker")

IV. Miscellaneous uses:

Beef juice	} Chiefly commercial
Beef tea	
Bouillon cubes	
Meat extract	

Notes:

1. Tender cuts may be used in the same ways as the tougher cuts.
2. The chopping of tough meat breaks up the connective tissue and thus makes the meat tender. Chopped meat is much used in the complete-dish series.
3. The essential agent for softening tough connective tissue is long-continued cooking in water at a moderate temperature; see its use in most of the dishes just listed. Collagen is converted by hydrolysis into gelatin, which is soluble in hot water. Most of the low-temperature methods for the prolonged cooking of tough meats call for cooking in water which is not allowed to reach the boiling point. These same low-temperature methods are also much used with fish, legumes, and other protein foods. Some of these methods are as follows:

a. Retained heat, that is, by use of fireless cookers

b. Direct heat; see use of each of the following:

Kettle on back of range

Kettle over a tiny flame called a "simmerer"

Double boiler (used occasionally with stews, etc.)

Steamer

Casserole, that is, a heavy earthenware dish with a closely fitting cover; used as a baking dish. Most casseroles are suitable for the dining table. Several recipes for the use of the casserole are given in this book, for instance:

Escalloped dishes (pages 75 ff.)

Meat pie (page 101)

Baked beans (page 143)

4. Note additional agents for softening the tough connective tissue of meats, to be used as desired in any of the dishes listed in the preceding tabulation:

a. Acid:

- (1) Acid developed in meat by long hanging
- (2) Vinegar

b. Freezing

c. Mechanical means, such as:

- (1) Chopping or grinding, as in Hamburg steak
- (2) Hacking with a knife or fork
- (3) Pounding
- (4) Scoring, as in flank steak

THE COOKING OF MEATS IN GENERAL: A SYNOPSIS

QUALITY	CUTS	AIM IN COOKING	METHODS OF COOKING
First-quality; that is, in general, the tenderest and most expensive meats	Ribs Porterhouse Sirloin Tenderloin	To develop flavor, to retain all or nearly all of the juices within the meat	Broiling, grill or pan Frying Oven-roasting Sautéing Etc.
Second-quality	Chuck Round Ribs, short Rump Shoulder Etc.	To develop flavor, to soften connective tissue, and to retain juices In some cases, to extract part of the juices for gravy and to keep the remainder within the meat	Broiling Braising (kettle or oven) Broiling Steaming Stewing Etc.
Third-quality; that is, in general, the toughest and least expensive meats	Flank Neck Plate Shank Etc.	To develop flavor, to soften connective tissue, in some cases to retain juices, and in other cases to extract all of the bone and meat juices	Soup Mince meat Beef loaf Hamburg Etc.

Notes:

1. This table is more or less arbitrary, since some of the methods of cooking could well be entered in more than one column. The word "juices" is meant in general to imply the flavoring material and the nutriment soluble in the liquid of the meat.

2. First-quality meats are usually cooked in large pieces; second-quality in either large or small pieces; and third-quality in small pieces.

3. The table applies in a general way to fish; most vertebrate fish are cooked by the first- or second-quality methods, and the aims in cooking are those stated above.

4. Study the effect of each of the following with respect to the extraction and retention of meat and fish juices, noting the value of experiments and of chart work:

Soaking in cold water

Salt

Size of pieces of meat or fish

Heat, dry or moist

Temperature, high or low

What is meant by searing of meat or fish? What is the effect of continued high temperature upon protein foods in general, such as meat and fish?

5. Pupil to experiment as follows, and note results:

a. Heat connective tissue 3-5 min. in a dry pan.

b. Cover connective tissue with water, and simmer 15-30 min.

c. Cover pieces of bone, tendon, and cartilage with water and simmer several hours.

ACTUAL COSTS OF MENUS

The following are specimen tables whereby the pupil can prove that any given menu is or is not economical.¹

Dinner for six persons (See page 112)

Beef stew with dumplings

Lettuce

Fresh fruit

Baked potatoes

Bread and butter

MATERIALS	VOLUME	WEIGHT		COST	CALORIES
		LB.	OZ.		
Beef, shin or other lean part .....	.....	1	8	\$0.21	800
Beef, rib trimmings, partly fat .....	.....	1	8	0.13	1,830
Dumplings	12	..	12	0.03	1,088
Potatoes	6	2	..	0.03	620
Bread	6 slices	..	6	0.04	456
Butter	6 tb.	..	3	0.08	1,350
Lettuce	2 heads	1	..	0.10	75
Vegetables and thickening for stew, etc. ....	.....	..	8	0.03	176
Grapefruit, 3 small .....	.....	2	..	0.30	640
				\$0.95	7,035

Such a menu could be served in the fall months at a trifle more than one cent per 100 calories.

Almost 1,200 calories per person are allowed for the meal, which is supposed to furnish two-fifths of the total calories for the day—that is, 3,000 calories per person.

¹ Both tables were compiled on the basis of the prices current in April, 1918.

Dinner for six persons (See page 120)

Beef pot-roast

Carrots

Cranberry pie

Boiled rice

Bread and butter

MATERIALS	VOLUME	WEIGHT		COST	CALORIES
		LB.	OZ.		
Beef, round, medium fat.....	.....	2	..	\$0.60	1,740
Rice, boiled.....	4½ c.	1	11	0.22	1,215
Carrots.....	6-12	1	..	0.05	160
Bread.....	6 slices	..	6	0.09	456
Butter.....	6 tb.	..	3	0.08	1,350
Cranberry pie.....	9 in. diam.	1	8	0.25	2,289
				\$1.29	7,210

This menu costs nearly two cents per 100 calories. It is a good example of the low cost of a meal when somewhat daintier dishes are served than are usual in a meal costing less than \$0.22 per person.

It may thus be seen that by a judicious combination of fewer and more costly foods an economical and well-balanced meal can be furnished.

MEAT STEWS

Dinner

Beef stew with dumplings
Lettuce

Baked potatoes
Bread and butter

Fresh fruit

TYPES OF MEAT FOR STEWS

The tougher cuts of meat may be used in all stews. Except for reasons of economy the tender cuts may be used also. It is possible to make any tough meat tender by long-continued cooking at low temperature.

Almost any combination of meats, or of meats and vegetables, may be used in stews. All recipes for stews allow considerable variation, according to taste; for example, in the recipe for beef stew, page 113, omit all vegetables if preferred, or substitute lamb, mutton, veal, or other meat wholly or in part for the beef.

Stews may also be prepared from left-over cold meat, such as roast or steak.

The items preceded by an asterisk in the following list usually are among the very inexpensive stewing cuts:

BEEF

*Chuck
Round
*Shin
*Oxtails, cut in joints
*Skirt steak, cut in 1"
squares
*Tripe

MISCELLANEOUS MEATS AND CUTS

Veal	Chicken
Mutton	*Lambs' kidneys
Lamb	*Liver and bacon
Pork	Etc.
Rabbit and other game	

Hungarian Goulash

Ingredients:

2 lb. lean beef, cut in 1" cubes (such as flank, rump, or round)
3 medium onions, chopped
9 medium raw potatoes, cut in ½" slices
Strained tomatoes (about 1½-2 c.)
1 t. paprika (Hungarian red pepper), or to color stew almost red

Method:

1. Brown meat and onions in a very little beef suet.
2. Add paprika and 1 c. tomatoes, then cover, and simmer 1½ hr., or until meat is almost tender.
3. Add potatoes, salt, and tomatoes almost to cover; cover pan, and simmer until potatoes are tender. (No water is added to Hungarian goulash.)
4. Place on a platter, add a border of noodles, and garnish with strips of cooked carrots and green peppers.

Beef Stew with Dumplings**Ingredients:**

4 or 5 cubes cut 1/2" sq.	4 1/2 lb. fresh raw beef
1 cube	Vegetables, measured after being cut into 1/2-1" cubes or slices:
1 h. tb.	1/4 c. onions
1 h. tb.	1/2-1 c. carrots
1 1/2 h. tb.	1/2-1 c. turnips
to cover	3-4 c. potatoes
to taste	Cold water, barely to cover stew
	Seasonings to taste, selected from the following:
	Salt (essential) Cloves
	Pepper (such as paprika) Celery salt
	Parsley Mushrooms
	Bay leaf and other herbs Bacon
	Thickening paste (smooth):
1 t.	4 tb. flour
2 t.	4 tb. tepid or cold water
	Possible additions:
	Milk or cream for making a richer gravy
	Suet drippings (see Note 2)
	Dumplings (mixed the same as biscuits):
2 tb.	2 c. pastry flour (see Note 10)
1/4 t.	4 t. baking powder
dash	1/2 t. salt
1/8 t.	2 t. fat
1 t. (about)	Milk or water for a soft dough, that is, 3/4 c. or a little more

Method:

1. Clean meat and bones, chop both in 1-2" cubes, and remove any excess fat.
2. Dredge with flour, salt, and pepper.
3. Place meat in a hot sautéing pan containing a very little fat, such as beef suet, and brown well on all sides; use just enough fat to grease the pan and prevent sticking (see Note 4).
4. Place meat in cold water to cover, cover saucepan, and bring water quickly to the boiling point.
5. Simmer at a temperature of 180° F., or 82° C., for remainder of time, that is, 3-4 hr., or until meat is tender. Add vegetables 1/2-1 hr. before stew is done.
6. Evaporate the liquid to such an extent that part, at least, of the vegetables, meat, and bone stand well out of the liquid.
7. Drop the dumplings on top of the vegetables, meat, and bone; do not let them sink into the liquid. Cover tight, and steam 12-20 min. without raising the cover. Boil the stew gently (do not simmer) so as to generate enough steam to cook the dumplings (the boiling of the stew for this short time will have no appreciable effect in toughening the meat).

8. Remove the meat, vegetables, and dumplings to a hot platter by means of a skimmer; discard any large bones.
9. Stirring constantly, add the thickening paste to the liquid and simmer 2-3 min., or until creamy. Allow 1 tb. flour to 1 c. stew liquid.
10. Pour the gravy over the meat and form a border of dumplings.
11. Garnish. Parsley or celery tips make a good garnish.

Notes:

1. Seasonings may be added at almost any time, but preferably at the beginning of the cooking.
2. Add drippings to the stewpan in step 4 in case the meat is extremely lean.
3. Brown stew results from the use of this method. Plain stew, or that which is not browned, is made in the same way as the brown stew, except that steps 2 and 3 are omitted. By the use of the same method as for beef, any other raw meat, such as veal or mutton, also can be made into either a brown or a plain stew. The time required for stews varies from 1 to 5 hr. according to the kind and quantity of meat used.
4. Note the necessity of a high temperature for developing the flavoring substances of foods in general—for example, those found in meat. Beware, however, of toughening the meat protein by cooking at a long-continued high temperature.
5. A stewpan, or a meat-stock pan, should be kept covered, or good flavoring material is lost by evaporation; note the tempting odor of meat that is being cooked.
6. With all stews, use water barely to cover the meat; as the water evaporates, add a little more from time to time.
7. If preferred, instead of simmering the meat, cook it in a fireless cooker or in a double boiler. With either of the latter methods allow more time than in simmering. Why? If the fireless cooker is used, the stew must be reheated when the vegetables are added.
8. Do not remove the scum, that is, the albumin, from stew or soup. Why?
9. Either of the following may be substituted for dumplings in forming the border:
Potatoes, mashed (using pastry tube or not, and browning potatoes in oven, if desired)
Rice, steamed or boiled
10. See Appendix A, pages 165, 166, for a list of wheat-flour substitutes for use in dumplings, etc.
11. Occasionally one of the following starchy materials is substituted for flour paste as a thickening agent in a stew:
Cornstarch paste (sometimes used in chop suey)
Bread or cracker crumbs
Sago or tapioca
Spaghetti, noodles, etc.
Cereal (such as rice, pearl barley, or rolled oats)
12. "Boiled dinner" of corned beef and vegetables is somewhat related to a meat-vegetable stew. It differs from stew in the following ways:
Meat is in large, not small pieces.
Liquor is not all utilized for gravy.
Etc.

Dumplings

Ingredients:

The same as for baking-powder biscuits (soft-dough 3:1) except for a very great reduction in the fat, all fat sometimes being omitted. Dumplings may also be made from sour-milk biscuit dough.

Method:

1. Mix as for biscuits. (See page 103.)
2. Cook in any of the three following ways:
 - a. Follow steps 6 and 7 of the method for beef stew, page 113 (see Note 1).
 - b. Put dumplings either in a greased sieve or on a greased plate in a steamer. Place the sieve or steamer over any one of the following and steam 15-20 min. (see Note 2):

Kettle of boiling water
Kettle in which potatoes or other vegetables are boiling
Stew itself, if kept boiling; or, if preferred, remove the meat and vegetables and boil the liquid only, not the entire stew.
 - c. Bake the dumplings as biscuits.

With all three processes, begin to cook dumplings 12-30 min. before the stew is done, and either drop dough by the spoonful, or roll it on board to $\frac{1}{2}$ " thickness and cut with a biscuit-cutter. Either a teaspoon or a tablespoon may be used for dropping the dumplings.

Notes:

1. In the method for beef stew, page 113, the gravy is thickened after the dumplings are done; this is a safe rule for all stews, since a thickened gravy is very likely to scorch during the 12-20 min. of boiling necessary for the cooking of the dumplings.
2. Process *b* is a better one than Process *a*, since dumplings are less likely to be soggy if cooked separate from the stew. The top of the double boiler is an excellent stewpan for use in class. Shape the dumpling with a biscuit-cutter, and steam 12-15 min. in a greased sieve placed over stew; keep the pan tightly covered.
3. Dumplings, like all other baking-powder biscuit mixtures, require quick cooking. The time for cooking dumplings varies according to their size.
4. Soggy dumplings are usually slow to digest. Why?

Stew Prepared from Cooked Meat

Method:

1. Remove all bones, cartilage, and excess fat from left-over beef, mutton, or any other meat. Steak or roast is excellent.
2. Cut meat in small cubes or in small thin slices.
3. Add any of the following raw vegetables:

Carrots	}	cut in small cubes	Celery	}	chopped
Potatoes	}		Onions	}	
Turnips	}		Etc.	}	
4. Almost cover with water or soup stock.
5. Simmer until the vegetables are tender.

6. Add the following seasonings to taste:

Parsley, chopped
Pepper and salt

Curry
Tomatoes

7. Thicken liquid with a flour paste.**Notes:**

1. The discarded bones are a good addition to the soup kettle.
2. Cooked vegetables may be added to the stew in place of raw ones.
3. Avoid overcooking tender meat. Why?
4. Thin slices of cold cooked mutton are palatable heated in the following brown gravy:
 - 2 tb. butter or a substitute
 - 2 tb. browned flour
 - 1 tb. bottled meat sauce
 - 1 tb. red-currant jelly
 - 1 c. water or stock

Luncheon

Beef stew

Parkerhouse rolls

Baked apples with whipped cream

Stuffed baked potatoes

Pickles

Coffee

Class to serve the menu to a group of ten teachers or pupils at a minimum cost per plate; vary the menu, if preferred.

Cost of Supplies

(Pupil to supply data)

SUPPLIES	QUANTITY	COST
Apples.....
Beef.....
Butter.....
Coffee.....
Cream.....
Flour.....
Milk.....
Pickles.....
Potatoes.....
Sugar (granulated and loaf).....
Vegetables for stew.....
Yeast.....
Total.....

Irish Stew

Ingredients:

3 lb. neck of mutton or lamb, cut in 1" cubes
 4-6 onions, sliced
 4-6 potatoes, cut in $\frac{1}{2}$ " cubes
 Salt and pepper

Method:

1. Add the onions to the meat, cover with water, and simmer 2-3 hr.; add the potatoes about 15 min. before the meat is tender. Add dumplings, if desired.
2. Thicken the liquor with a flour paste, season, and serve.

Note:

Carrots and turnips may be added.

Stewed Lambs' Kidneys

Ingredients:

(6 servings)

$\frac{1}{2}$ kidney	6 kidneys
$\frac{1}{2}$ t.	3 tb. flour
$\frac{1}{2}$ t.	2 tb. bacon fat
	1 c. thin gravy (see Note 1):
$\frac{1}{4}$ t.	1 tb. onion, chopped fine
$\frac{1}{4}$ t.	1 tb. bacon fat
$\frac{1}{2}$ t.	1 tb. flour
2 tb.	1 c. water or stock
dash	$\frac{1}{2}$ t. salt
dash	Pepper

Method:

1. Remove skin from kidneys, then soak them 15 min. in cold water to cover.
2. Drain, dry, cut in very thin slices, then remove any tough tubular cores by means of shears.
3. Sprinkle with 3 tb. flour, and sauté 2-3 min. in 2 tb. bacon fat.
4. Add the kidneys to the thin gravy, and simmer 2-5 min., or until the kidneys are tender.
5. Place on toast and garnish with parsley.

Notes:

1. In making the gravy, sauté together the onion and bacon fat, then proceed by any of the methods for white sauces and their derivatives, pages 70 f.
2. Add a little lemon juice to the stew, if desired.
3. One-half a beef kidney may be substituted for the six lambs' kidneys.
4. Lambs' kidneys formerly cost \$0.01 to \$0.02 each.
5. Examine the structure of a kidney.
6. Stewed kidneys, as well as the two following recipes, are nutritious and also inexpensive.

Stewed Liver and Bacon**Ingredients:***(2-4 servings)*

- $\frac{3}{8}$ c. beef liver cut in $\frac{1}{2}$ " cubes (about $\frac{1}{8}$ lb.)
- 2 tb. onion, chopped
- $\frac{1}{4}$ c. bacon ends cut in $\frac{1}{4}$ " cubes
- Water to cover
- $\frac{1}{16}$ t. powdered sage
- Pepper
- Thickening paste:
 - 2 tb. flour
 - 3 tb. cold water

Method:

1. Soak liver 10 min. in cold water to cover.
2. Drain, cover with fresh water, heat just to the simmering point, then drain.
3. Brown the onion in bacon fat.
4. Mix liver with all the other ingredients except the flour paste, and simmer gently 15-30 min., or until the meat is tender.
5. Thicken the gravy with the flour paste, season, and serve on toast.

Stewed Tripe Rolls or "Birds"**Ingredients:***(4-6 servings)*

- | | |
|---|--|
| 1 strip
$4" \times 1\frac{1}{2}"$

1 t.
2 t.
$\frac{1}{2}$ t.
few drops

$\frac{1}{4}$ t.
$\frac{1}{2}$ t.
spk.
spk.
$\frac{1}{4}$ t.
dash
dash
2 tb.
4 tb. water | $\frac{1}{2}$ lb. boiled tripe, cut in 7 or 8 strips, each $4" \times 1\frac{1}{2}"$ (see Note 1 for directions for boiling tripe)
Stuffing, made by mixing together the following ingredients:
2 tb. cooked lean ham or bacon, chopped
$\frac{1}{4}$ c. coarse cracker crumbs
1 tb. chopped sweet green or red pepper
Water to moisten (about $2\frac{1}{2}$ tb.)
Tomato sauce (see Note 2):
$\frac{1}{2}$ tb. butter or a substitute
1 tb. chopped onion
$\frac{1}{4}$ bay leaf
$\frac{1}{4}$ t. chopped parsley
$\frac{1}{2}$ tb. flour
$\frac{1}{4}$ t. paprika
$\frac{1}{4}$ t. salt
$\frac{3}{4}$ c. strained tomatoes |
|---|--|

Method:

1. Spread each strip of tripe with stuffing, roll, and fasten with string.
2. Roll each "bird" in fine cracker crumbs and sauté 5 min., or until slightly brown, in 1-2 t. bacon fat.
3. Add the rolls to the tomato sauce, cover, simmer 5-15 min., then remove the bay leaf.
4. Add more salt and paprika, if desired, place on toast, and garnish.

Notes:

1. To prepare honeycomb or plain tripe for use in various recipes:

- a. Secure raw tripe from which the butcher has removed the outside coating, and wash in several waters.
- b. Cover with a very large quantity of cold water, and simmer 3 hr., or until very tender; change the water 2-4 times during the first half of the period of cooking so as to remove the strong odor and flavor. If desired, add chopped onion and parsley, cloves, and peppercorns to the water in the beginning.

The water in which tripe has been boiled contains considerable gelatin and some other nourishment. Use for this left-over water?

2. In making the tomato sauce sauté the first four ingredients together 2-3 min., then add the flour. Add the other ingredients, and simmer 2-5 min.

3. Stuffed rolls are good if sautéed and then baked.

4. Tripe is lacking in extractives and color, hence it is well to add high seasoning and bright colors, such as:

Cabbage leaves (a good addition
to stuffing)

Onions

Parsley

Pimentos (used either as a garnish or as
part of the stuffing)

Tomatoes

Etc.

VARIOUS KINDS OF STEWS (CHIEFLY MEAT)

(*Pupil to supply data*)

STEW	TYPICAL INGREDIENTS	ANY PECULIARITY OF METHOD	NATIONALITY
Chile con carne.....			
Chop suey.....			
Chowder.....			
Fricassée.....			
Goulash.....			
Haggis.....			
Haricot.....			
Irish.....			
Kedgeriee.....			
Kolcannon.....			
Ragout.....			
Salmi.....			

Note:

See recipe for dried-legume stew on page 95; chowder, pages 97, 98.

BRAISED MEATS

Dinner

Beef pot-roast
Carrots

Boiled rice
Bread and butter

Cranberry pie

Braising is a combination of baking, steaming, and stewing. It is applied to meat, poultry, game, and fish.

The three types of meat used in braising are as follows:

Solid piece of meat (any meat, poultry, or viscera, such as liver)

Roll of sliced meat (such as rolled steak or mock duck)

A roll of chopped meat

FOUR TYPES OF BRAISING

I. Kettle-braising, or pot-roasting.

Place kettle over a low flame.

II. Fireless-cooker braising.

Cook food for a few minutes over a fire, then cook until tender in the cooker; if necessary, brown in oven before serving.

III. High-pressure-cooker braising.

IV. Oven-braising, or oven-stewing.

In oven-braising, follow the same rules as for kettle-braising, but place the meat on a rack in a dripping or braising pan, cover, and bake in a slow oven; temperature, etc., are the same as for pot-roast. Water in the pan should reach almost to the rack; an average rule is to add 1 c. water to each pound of meat. Allow $\frac{1}{2}$ –1 hr. to each pound of meat. If desired, sear the meat at the beginning in a sautéing pan so as to develop flavor and prevent the escape of juices.

A casserole is often substituted for a dripping pan.

Notes:

1. All the types are excellent for use with tough meats, or those requiring long, slow cooking. The slower the process of cooking, the tenderer the meat; low-temperature apparatus is essential. The utensils should be covered tight during the whole period of cooking; therefore no basting is necessary.

2. With any of the four types, place vegetables around the meat before cooking, if desired; vegetables are not essential.

Pot-Roast, or Meat Cooked by Kettle-Braising

Pot-roast consists of a solid piece of meat, to which a very little water is added. It is cooked in a kettle on top of the stove; the water finally evaporates and the meat is browned. The average size of a roast is 3-6 lb. Beef is generally used.

Method:

1. Place a very little suet in a hot iron kettle.

2. Add meat and sear on all sides; browning of the meat adds to the flavor.

The following semi-tough beef cuts are desirable:

Round

Shoulder

Rump

Etc.

3. Add salt and pepper. If meat is very lean, add fat to it; for example, fasten strips of fat salt pork to the top surface, or lard with the strips.

4. Add $\frac{1}{2}$ -1 c. boiling water or stock, or just enough to keep the meat from burning.

5. Cover tight with a tin lid in which there is a hole for a thermometer; insert a thermometer.

6. Place over the "simmerer," and keep at 185° F., or 85° C., for 4-5 hr., or until the meat is tender; allow 1-1 $\frac{1}{4}$ hr. per lb of meat. The water should show no motion. Turn the roast once or twice during the period of cooking, and as the water evaporates add a little more from time to time.

7. Place meat on platter.

8. Add a little boiling water to kettle and thicken with a flour and water paste. Strain gravy and place on platter with meat or in a gravy boat.

9. Garnish with parsley and cooked spaghetti.

Notes:

1. The following spices and herbs, usually tied in a bag, are often added to the kettle:

Bay leaf

Peppercorns

Cloves

Red pepper (not ground)

2. Suggested proportions for pot-roast are as follows:

a. 2 lb. meat

b. 3 lb. beef from lower

c. 3-6 lb. meat

2 c. parsnips

round or rump

$\frac{1}{2}$ -1 c. of each of the

2 c. carrots

$\frac{1}{2}$ c. each of diced

following vegetables,

2 c. cabbage or
turnips

carrots, turnips, and
celery

diced:

2 c. rutabagas

1 onion

Carrots

1 onion

Seasonings:

Celery

Seasonings

2 thin slices salt pork

Turnips

$\frac{1}{2}$ t. peppercorns

Onions

3 cloves

Etc.

1 bay leaf

Seasonings

$\frac{1}{2}$ t. salt

3. The pot-roast is improved if, at the beginning, vegetables are placed in the bottom of the kettle; only enough water is added to keep the vegetables from burning. Serve vegetables on the platter in a circle about the meat. Tomatoes may be added when the meat is about done.

4. Some authorities advise placing the meat on a support in the bottom of the kettle, such as a rack or bones or covers of cans.

5. Pot-roast may be used for a class exercise if the tender or more expensive meat is purchased; tough meat cannot be cooked tender even in two long class periods. Satisfactory results may be secured by cooking the following recipe for 30-45 min.:

1 cube lean tender meat, 1-1½" square

1 thin strip fat salt pork

1 small piece suet

1 tb. vegetable cubes (¼"

2 peppercorns

2-4 tb. water

Thickening paste:

¼ t. flour

1 t. water

The class recipe as given is also satisfactory for oven-braising, and should be baked 30-45 min. in either of the following utensils:

Small casserole

Custard cup, with a small pie tin as a cover

A rack is not needed in cooking the class recipe of either the pot- or oven-braised meat; however, the cover of a very small baking-powder can serves very well as a rack in either case.

Stuffed Heart

(Similar to a pot-roast)

Method:

1. Wash a beef heart thoroughly inside and out, and stuff with the following mixture:

1 c. broken bread, dipped in fat and browned in the oven

1 onion, chopped

Salt and pepper to taste

Sage to taste

2. Sew up the opening.

3. Cover the heart with water and simmer 2½ hr., or until tender; or boil 10 min., then cook 6-8 hr. in the fireless cooker.

4. Remove from the water about ½ hr. before serving; dredge with flour, pepper, and salt, or sprinkle with crumbs, and bake until brown.

Notes:

1. Two veal, mutton, or pork hearts may be substituted for the one beef heart; allow about half as much time for cooking.

2. Bake the hearts for the full period of cooking, if preferred; baked fresh beef tongues are also very good and cheap.

3. From the standpoint of nutrition, beef or veal hearts are almost the cheapest, if not the cheapest, meats per pound that can be bought.

Steak Roll, or Mock Duck*(Either kettle- or oven-braised)***Method:**

1. Wipe, trim, and remove as much tough membrane as possible from a steak of any animal; tough beefsteak cut $\frac{1}{2}$ "- $\frac{3}{4}$ " thick is ordinarily used, such as any one of the following steaks:

Flank steak, scored by butcher

Round steak

Skirt steak, scored by butcher

2. Spread with stuffing. Mix the following ingredients in order to prepare stuffing for either steak roll or "meat-birds" as given in Note 2 (the class recipe is sufficient for one meat bird):

2 tb.	4 c. coarse stale bread crumbs or $\frac{1}{4}$ " cubes
dash	1 t. salt
dash	$\frac{1}{4}$ t. pepper (such as paprika)
$\frac{1}{4}$ t.	4 tb. butter or a substitute (such as drippings)
spk.	4 tb. chopped onion, sautéed with the fat
to taste	Optional seasonings:
	Celery salt
	Green pepper, chopped
	Herbs (such as sage, summer savory, and thyme)
	Lambs' kidneys, chopped
	Olives, chopped
	Parsley, chopped
	Tomato, chopped
	Liquid to moisten, selected from the following:
few drops	Cold water, stock, or milk
$\frac{1}{2}$ t.	Raw egg (used only in combination with other liquids)

3. Roll as for a jelly roll and fasten with string or skewers.

4. Place several strips of fat salt pork over the top surface.

5. Cook in any of the following ways, allowing $\frac{3}{4}$ - $1\frac{1}{2}$ hr.:

a. Kettle-braise, or pot-roast; add a very little liquid to kettle.

b. Oven-braise; add a very little liquid to dripping pan or casserole.

c. Steam or stew until almost tender, then brown in oven.

d. Bake in oven as an ordinary roast; allow 50-60 min.; this method is not advisable if meat is very tough.

Class to cook four steaks by the four methods, respectively, then compare as to flavor, texture, etc.

6. Place on a platter and add a gravy prepared from the liquor in the pan.

7. Serve with currant or other tart jelly.

Notes:

1. Tender meat, as well as tough, may be used for steak roll or for meat-birds, as described in Note 2. Fish also may be prepared as a roll or as birds.

2. "Meat-birds" is the name applied to small stuffed rolls of steak or other meat; they are good as a class exercise, and are made as follows:

- a. Cut any of the following raw meats into thin slices about 4" by 2":

Round steak

Veal cutlet

Pork-tenderloin cut crosswise and pounded until flat

Etc.

Slices of left-over roast of beef or veal are sometimes used.

- b. Spread each piece of meat with the stuffing given in step 2 of the foregoing method, inclose a strip of bacon, and roll; fasten with toothpicks and string.

- c. Cook as follows:

(1) Roll in flour and sauté 2-3 min. in fat.

(2) Cover with water, stock, or cream; cover utensil, and simmer 20-60 min., or until tender.

(3) Place on toast, and garnish with parsley.

The foregoing is the usual method; if preferred, cook by any of the four methods mentioned for mock duck.

MEATS COOKED WITH ACIDS; BAKED POTATOES

Dinner

Sour beef, baked
Beet salad

Stuffed baked potatoes
Bread and butter

Sliced fruit

Avoid using utensils made of iron, aluminum, or other metal in the following recipes. Why?

Sour Beef, Baked

Ingredients:

One cube lean beef, 1¼"-1½" sq.	Lean beef, such as rump or lower round
½ t. dash	Seasonings (these form a sour-sweet sauce in the pan):
½ t. brown	Strong vinegar
1 t.	Salt and pepper
1 t.	Sugar, brown or white
½ t.	Raw apple, chopped
	Raw onion, chopped as fine as sugar
	Suet, chopped

Method:

1. Place the meat in an earthen or granite baking dish, and pour the vinegar over the meat.
2. Sprinkle the meat with the other seasonings, cover, and bake until tender.
3. Remove the meat and the sour-sweet sauce to a hot platter and serve.

Note:

Place the class recipe in a custard cup, cover tight with a small pie tin or jelly-jar cover, and bake 30-40 min. in a moderate oven.

Sour Beef, Simmered

(Meat soaked in vinegar before being cooked)

(Recipe I)

Ingredients:

Rump or lower round
Onion, sliced
Bay leaves
Salt
Mixed whole spices
Vinegar, or a mixture of half water and half vinegar, to cover the meat

Method:

1. Place all the ingredients together in a crock and allow them to stand 7 days in winter or 3-4 days in summer; turn once daily and keep covered.
2. Remove the meat from the liquid and brown in fat.
3. Strain the liquid, add to the meat, and simmer until the meat is tender.
4. Place meat on platter and slice.
5. Thicken the liquid with a flour paste or ginger snaps broken into pieces, strain, and pour over the meat; cream is sometimes added to the gravy.

Note:

Tough steaks, such as round, flank, or skirt steak, may be treated in any of the following ways:

- a. Soak the steak several hours, for instance over night, in a mixture of vinegar and water or in a mixture of one-third as much oil as vinegar. Drain the steak and dry thoroughly, then broil.
- b. Soak the steak as in (a) above, then bake in a casserole.
- c. Stew the steak until tender in water containing a little vinegar; the following is a typical recipe.

Sour Beef, Simmered*(Recipe II)***Ingredients:**

- 5 lb. flank steak
- 1 tb. salt
- $\frac{1}{2}$ t. pepper
- $\frac{1}{8}$ t. cloves
- 1 t. summer savory
- 3 tb. vinegar

Method:

1. Remove the tough skin from steak.
2. Place the thin portion of steak on top of the thick portion.
3. Sprinkle with all the other ingredients, roll, tie with twine, and let stand 12 hr. in a cold place.
4. Add water to cover, and simmer $3\frac{1}{2}$ -4 hr., or until tender.
5. Thicken gravy, add salt and pepper, and serve hot or cold.

TYPES OF CONNECTIVE TISSUE

Connective membrane (commonly called connective tissue)

Ligaments and tendons

Cartilage, or gristle

Bone

Notes:

1. Pupil to experiment as follows with the four types, and to note results:
 - a. Boil 30 min. in water.
 - b. Boil 30 min. in water containing vinegar.
 - c. Soak several days in strong vinegar.
2. Define collagen; gelatin.

USES OF ACID WITH MEATS AND FISH

I. With tough meats and fish, such as lobster.

Acid (vinegar, etc.) softens connective tissue and so makes tough meat or fish tender and more digestible; note applications as follows:

- a. Acid is used in soaking meats before cooking by any of the following methods, the meat usually being soaked several hours, for instance, 12 hr. or over night:

Broiling

Baking in a casserole

Stewing

Etc.

- b. Acid is added to the meat during the process of stewing; sometimes the meat is rubbed with vinegar before being stewed.
- c. Acid (vinegar) is sometimes added to "boiled" meat or fish; the vinegar is ordinarily used for parboiling only, as with lobsters.
- d. Acid resulting from fermentation of the sugar in meat is a softening agent; that is, when meat is allowed to hang in cold storage for a week to three months or longer, it becomes softened to a greater or lesser degree, and also "ripened," owing in part to the action of the acid and in part to the enzyme action.

II. With tough or tender meats and fish.

1. Acid, especially when meat (tough or tender) is soaked in it, prevents putrefaction; acid is antiseptic. Either of the following vinegar mixtures, which can be prepared in large quantities and be used over and over again, may be used in soaking meats:

Vinegar and water	} See Note a, page 126
Vinegar and oil	

2. Acid is often used chiefly to flavor tough or tender meat and fish; for example:

- a. Acid is used in corning meat.
- b. Acid dressings are served with salads, such as chicken or lobster.
- c. Acid sauces are served with the following:
 - Lobster, crab, and other fish
 - Meats of various kinds

Many persons, chiefly Europeans, enjoy a sour-sweet sauce with meat or fish; such a sauce (containing raisins) is good with tongue. Mint sauce, served with lamb, is a sour-sweet sauce that is especially popular in this country.
- d. Acid is rubbed on meat before it is cooked; tender meat, such as veal, is often better in flavor if rubbed with lemon juice or vinegar before being fried or stewed.
- e. Acid resulting from fermentation may improve the flavor so far as some palates are concerned; some persons enjoy "high" game or other meat. See I, d, above.

Baked Potatoes, Sweet or White

Method:

1. Select potatoes of uniform size, and scrub them with a vegetable brush.
2. Place in a very hot oven, either on the oven-rack or in a shallow pan; the temperature of the oven should be 450° F., or 232° C., or higher.
3. Bake 30-45 min., or until soft when squeezed in a towel. Time varies with the size of the potatoes; the average time is 45 min.
4. Serve immediately, since baked potatoes deteriorate by standing for even a few minutes.

Notes:

1. Great care is required to bake potatoes properly; for example, if the potatoes are done even 2-3 min. before the dining hour, allow the steam to escape from them, or it will condense and make the potatoes soggy; either crack the skin by squeezing the potato, or puncture the skin with a fork. The ideal potato is dry and mealy, not soggy.
2. Some cooks dry the skins, then grease them, before baking the potatoes; this keeps the skins soft and edible.
3. Potatoes à la paprika, a derivative, are prepared as follows:
 - a. Bake potatoes.
 - b. Roll and squeeze gently in order to soften pulp, then squeeze sharply so as to crack the top surface of the potato.
 - c. Without removing the pulp from the shell, mash the potato with a fork.
 - d. Add a lump of butter, salt, and paprika, and serve.
4. Advantages of baked over other potatoes are as follows:
 - a. More of the valuable salts of the potato are retained in baking than by any other method of cooking potatoes.
 - b. Higher flavor results than from boiling or steaming.

Note that high temperature in general produces high flavor in foods.

5. Left-over baked potatoes are excellent used as follows:

Creamed
Escalloped
Sautéed (as in hash)

Stuffed Baked Potatoes, Sweet or White

Method:

1. Bake potatoes.
2. Cut lengthwise at once and scoop out the pulp, leaving the shells intact.
3. Prepare ordinary "mashed potatoes" from the pulp; that is, season with hot cream or milk, salt, pepper, and butter, then mash and whip until very light and creamy. (See recipe, page 56.)
4. Pile roughly in the shells; do not smooth the surface.
5. Sprinkle with milk, bits of butter, or grated cheese.
6. Bake 5-10 min. in a hot oven until puffed and brown; the direct flame of the broiling oven is sometimes needed for browning.
7. Garnish with parsley and paprika, and serve at once.

Notes:

1. As a convenience, any potatoes in the half-shell may be prepared as long as 12 hr. before browning and serving.
2. Any of the following foods may be beaten into the pulp during the process of mashing:

Cheese, grated	Fish, chopped
Egg yolk, beaten	Meat, chopped
Egg white, beaten	Parsley, chopped
Egg, hard-cooked and chopped	Pimentos, chopped
- "Complete" dishes result from the addition of certain of the foods listed.
3. Eggs-in-the-nest, a derivative, is prepared as follows:
 - a. Fill potato half-shells with mashed potato.
 - b. Drop a raw yolk of egg in the center of each half-potato, then bake 5-10 min.
4. Sweet potatoes are also good prepared in the following way:
 - a. Season mashed potatoes, and place them in the shells of baked potatoes or in a greased baking dish.
 - b. Cover with a sirup made by mixing 1 t. butter with 2 tb. molasses, and bake until brown.

Potato Puff*(A derivative of stuffed baked potatoes)***Ingredients:***(8 servings)*

- 2 c. hot mashed potatoes, prepared from either baked or boiled potatoes (sweet or white)
- 3 tb. butter
- 1 t. salt
- White pepper
- $\frac{1}{2}$ c. hot milk
- 2 egg yolks, beaten light yellow
- 2 egg whites, beaten stiff

Method:

1. Whip together until very light all the ingredients except the whites and yolks.
2. Whip in the yolks, being careful not to allow them to harden in lumps.
3. Fold in the whites.
4. Pile lightly in the shells of baked potatoes or in a buttered baking dish, and bake in a hot oven 20-25 min., or until puffed and brown. Serve at once. Why?

Notes:

1. Omit either the yolks or whites, if desired, or use just one yolk and one white.
2. The following ingredients may be added:
 - Onion juice
 - Cayenne or paprika
 - 1-3 t. chopped parsley
 - $\frac{1}{4}$ - $\frac{3}{4}$ c. grated cheese
 - Etc.

Avoid a high temperature when cheese is used. Why?

BROILED MEAT BALLS

Dinner

Hamburg steak

Tomato salad

Apple sauce

Riced potatoes

Bread and butter

Cookies

Meat Balls Prepared from Raw Meat

(Not a complete dish)

Method:

1. Remove bone and gristle from raw tough steak or other lean meat; neck pieces and flank are often used. If the round or other beef cut is used, the product is called Hamburg steak. Any meat used must be strictly fresh.

2. Mix with a little bacon or beef suet and run through the meat-grinder. If the balls are for use in children's or invalids' diet, it is well to grind the meat twice.

3. Form into round flat cakes, $\frac{3}{4}$ " to $1\frac{1}{4}$ " thick.

4. Grill- or pan-broil, following the same rules as for all tender cuts, such as steaks, chops, etc.:

a. High temperature to sear; use *very* little, if any, fat in pan.

b. Lower temperature until done.

In pan-broiling chopped raw meat the pan should be kept covered.

5. Place on a hot platter, add salt, and garnish with bacon and parsley. Why add salt after (not before) cooking these balls, steaks, chops, etc.?

6. Surround pan-broiled balls with gravy made as follows:

a. Add flour to pan, and brown well.

b. Slowly add one of the following liquids:

Milk or cream

Tomatoes, strained

Stock or water

Etc.

c. Cook until creamy, then add salt and pepper.

Notes:

1. No fat is required for the gravy, other than that left in the pan by the meat; use ingredients as follows:

1 t.	|	2-3 tb. flour
3 tb.		1 c. liquid

The class recipe is sufficient for two thin cakes each 1" in diameter.

2. The following ingredients may be added to the meat:

Seasonings (such as chopped onions)

Starchy material and liquid (see rules for complete-dish balls, page 61)

Raw egg is often desirable as a binding agent; use 1 egg to $1\frac{1}{2}$ lb. meat.

Meat loaf is a variation either of the above recipe or of complete-dish meat balls.

3. Observe the following precautions:
 - a. See the meat before buying it.
 - b. See it ground in the store, or else grind it at home; do not trust ground mixtures as found ready to sell. It is much safer to grind the meat at home, as ground meat spoils very quickly.
4. Compare Hamburg steak with ordinary steak as to price and nutriment.

Brown Sauce or Gravy

(For use with meats and vegetables)

Ingredients:

- 1 c. liquid — one or a mixture of the following:
 - Milk or cream
 - Water or stock
 - Tomatoes, strained
 - Juices from roasting or broiling pan (secured by boiling a little water in the pan after removing the meat and surplus fat)
- 2-4 tb. white flour
- 2 tb. butter or a substitute (drippings, such as fat from the roasting or broiling pan, are often used)
- Salt and other seasonings

Method I:

1. Brown flour in a sautéing pan, stirring constantly.
2. Add fat and seasonings to form a paste.
3. Add liquid slowly and stir over fire until creamy.

Method II:

1. Stir fat and white flour together over the fire until as brown as coffee. Beware of burning the fat. Why?
2. Add seasonings.
3. Slowly add the liquid and boil until creamy.

Notes:

1. Method II is less desirable than Method I, because the fat is almost sure to be overheated or burned, and thus objectionable substances may be formed.
2. In seasoning brown sauce, use salt, pepper, and any of the following:

Bacon or ham, in dices	Celery	Onion
Bay leaf	Cloves	Parsley
Beef extract	Leek	Thyme
Caramel	Mushrooms, dried	Tomato
3. Potatoes are good baked with brown sauce; for example, mix 2 c. boiled potatoes cut in $\frac{1}{4}$ " cubes with 1 c. brown sauce, then bake until well blended and brown on top.
4. Two derivatives of brown sauce are as follows:
 - a. Chestnut sauce, for use with turkey: Add $\frac{1}{2}$ c. brown sauce to 1 c. mashed boiled chestnuts, boil 3 min., and serve.
 - b. Giblet sauce: Make a brown sauce, using giblet stock as liquid, then add chopped cooked giblets.

Luncheon

Hamburg steak

Cabbage slaw

Doughnuts

Bread and butter

Escalloped potatoes

Pickles

Coffee

Class to serve the menu to a group of ten teachers or pupils at a minimum cost per plate; vary the menu, if preferred.

Cost of Supplies*(Pupil to supply data)*

SUPPLIES	QUANTITY	COST
Bread.....		
Butter.....		
Butter substitute.....		
Cabbage.....		
Coffee.....		
Cream.....		
Eggs.....		
Fat, frying.....		
Flour, white.....		
Meat.....		
Milk.....		
Parsley.....		
Pickles.....		
Potatoes.....		
Seasonings.....		
Sugar (granulated and loaf).....		
.....		
.....		
.....		
Total		

PROTEIN-FOOD CROQUETTES

Luncheon

Meat croquettes
Stewed corn

Escalloped potatoes
Bread and butter

Fruit cobbler

Croquettes in Which a Protein Food Is the Chief Ingredient

Ingredients:

(10 croquettes)

2-3 tb.	2 c. protein food, selected from the following, singly or in any combination: Chopped meat of any kind Chopped fish of any kind Mashed legumes (such as kidney or soy beans) Grated cheese (dry, and not very rich) Etc.
1½ t.	1 c. very thick sauce (as thick as drop batter): 4 tb. flour
1 t.	2 tb. butter or a substitute (see Note 3)
2 tb.	1 c. liquid—one or a mixture of the following: Milk or cream Tomatoes, strained Stock or water Etc.
dash	⅓-½ t. salt
dash	¼ t. paprika
to taste	Other seasonings to taste, selected from the following: Cayenne Parsley, chopped Celery salt Lemon juice (with salmon or other fish) Onion salt Garlic Onion juice Etc. Onion, chopped

Method:

Follow the general method for croquettes, page 84.

Notes:

1. Left-over cooked meat, fish, and legumes generally are used in mixing the croquettes. For further suggestions as to protein foods, liquid, and seasonings for use in this recipe, see list, pages 48 ff., "Five Groups of Ingredients for Complete Dishes."

2. The recipe calls for meat, fish, and legumes that have been drained free of all juice and gravy. If the meat or other protein food used is very moist, add less than 1 c. sauce to it; that is, add just enough sauce to make it possible to handle the mixture easily.

3. In salmon croquettes salmon oil may be substituted for the butter.

4. Note suggestions as to the use of kidney beans or other legumes in the recipe:

a. Drain the cooked legumes.

b. Mash, add the white sauce, then, stirring constantly, cook the mixture until it is very stiff and quite dry (or dry it in the oven).

c. Chill, and mold.

5. In making cheese croquettes according to the recipe, it is well to cover them with a very thick coating of egg and crumbs, otherwise some of the cheese in melting may escape into the fat. Brown the croquettes very quickly; the cheese should melt, but should not become tough and stringy from prolonged cooking.

6. Sometimes a little of one or more of the following ingredients is a palatable addition:

Grated cheese

Beaten egg

Mushrooms

Oysters, parboiled

Lean salt pork, bacon, or ham, ground

Mashed potatoes or other vegetables

Left-over breakfast cereals (such as rice)

Meat gravy or stuffing

Soft bread crumbs

Etc.

Whenever any croquettes are too soft to handle, add a few soft bread crumbs; mold at once, or cook until stiff, cool, and then mold. If an excess of crumbs is used, a so-called complete dish results, as in the following recipe:

1-4 c. soft stale bread crumbs

1 c. chopped meat

Seasonings

$\frac{3}{4}$ -2 c. very thick white sauce, to mix to a consistency for molding

7. Croquettes in general are much more easily handled if all the ingredients are cold. It is essential that the white sauce and other ingredients for protein-food croquettes be thoroughly chilled before being molded.

8. Croquettes are usually fried, but they may be rolled in buttered crumbs and baked in a hot oven.

MEAT STOCK

Luncheon

Beef broth

Egg salad

Wafers

Brown-bread sandwiches

Fresh fruit

Meat Stock Made without Vegetables

Ingredients:

1 lb. meat and bone (such as $\frac{3}{4}$ lean meat and $\frac{1}{4}$ fat and bone)

2-3 c. water (depending on the desired richness of stock)

Salt (about 1 t. to 1 qt. completed stock)

Pepper (about $\frac{1}{4}$ t. to each t. salt used)

Other seasonings to taste

Meat Stock Made with Vegetables

(Proportions to be varied as desired)

Ingredients:

1 lb. meat and bone

1 qt. water, or to cover

1-2 tb. each of the following vegetables, sliced, chopped, or cut into $\frac{1}{2}$ " cubes:

Carrot

Celery stalk or root

Onion

Turnip or cabbage

Seasonings:

Salt and pepper

3 or 4 peppercorns

2-4 cloves

Bit of bay leaf

Sprig of parsley, or celery leaves

Method:

This method is for use with stock made with or without such additions as herbs, vegetables, cereals, etc. The time at which these additions should be made is stated in Note 1, page 136.

1. Wipe meat and bones with a damp cloth.

2. Split bones and cut meat and cartilage in small pieces.

3. Soak $\frac{1}{2}$ -1 $\frac{1}{2}$ hr. in cold water almost to cover; the usual rule is to use 2-3 c. water to 1 lb. meat and bones.

4. Place over the fire in this same water, cover, and very gradually bring to the boiling point. (If one prefers not to take time for soaking the meat, put the meat into either cold or boiling water before placing it over the fire.)

5. Simmer 6-8 hr., or until meat falls into shreds; do not skim. (See Note 2.) Keep the kettle well covered, since much of the flavoring material of stock is volatile.

6. Remove bones and meat, and set liquid aside over night to cool. Cool quickly. Why?

7. Remove layer of fat from top with a knife or spoon; a napkin, a piece of bread, or a blotting paper is often of use in removing the last particles of fat. The following is a practical method for removing fat from warm stock: Wrap ice in a thin cloth and move it around on top of stock. The fat congeals on the cloth. (The discarded fat may be used in soap-making.)

8. Clear if desired.

9. Add salt and other seasoning. Why is salt added the last thing, that is, after, not before, the clearing process?

Notes:

1. Note the time for making certain possible additions to plain stock:

- a. Herbs, tied in a bag, and other seasonings: Usually added about 1 hr. before the stock is done.
- b. Solid vegetables: Added in the very beginning or at almost any time later, and either before or after the stock is cleared; 1 hr. before the stock is done is a very good time.
- c. Starchy material, such as rice: Added 20-30 min. before the stock is done.
- d. Tomatoes, milk, and thickening: Added at the very last.

Herbs and solid vegetables are removed from the stock at the time the bones are removed.

2. Reasons for not boiling the stock:

- a. Meat is toughened by boiling, and the juices are thereby retained; note that the chief aim in preparing stock is to extract all of the meat juices.
- b. In boiling, more flavoring material is lost through evaporation than in simmering; that is, the excessive steam formed tends to carry off more of the volatile substances.

3. Do not delay in serving the stock, since stock does not keep long after the layer of fat has been removed. Use one of the following methods of preserving stock:

- a. Addition of salt
- b. Use of cold (stock will keep in a refrigerator 3-4 days, often longer, if fat on top is unbroken)
- c. Avoidance of vegetables in the making of stock (vegetables spoil quickly in a warm temperature)

4. A good plan is to make stock two or three times weekly; stock should always be kept on hand.

5. Unless the ice method mentioned in step 7 is used for removing fat, it is not well to make soup from stock prepared the same day; generally speaking, fat cannot easily be removed from stock that has not been allowed to stand over night. A soup is poorly served if any fat is found floating on it. One reason for avoiding greasy soup is that the presence of fat results in too hot a soup. Why? Other reasons?

6. The method given results in amber or white, not brown, stock. If brown stock is desired, use either of the following methods:

- a. Prepare dark-brown caramel; dilute with water and add to soup; if caramel is sufficiently diluted, the flavor of soup is not injured, but improved.
- b. Brown about one-third of the meat, and part of the vegetables, if desired, in a little hot marrow or other fat; then add these ingredients to contents of soup kettle.

Note that the browning of the meat lends flavor as well as color to the stock, since the high temperature used in sautéing develops the flavoring substances found in the meat; the boiling temperature of water, 212° F., or 100° C., is not sufficient to develop these flavors. The brown pieces of meat left over from roast beef, lamb, veal, etc., are also useful in preparing browned stock.

7. The tasteless meat left from making stock should be used in the preparation of meat loaf and other dishes.

To Clear Meat Stock

Method:

1. Remove all the fat from the top of jellied or liquid stock.
2. To every qt. of cold stock add 1 white of egg and the crushed shell; beat the egg slightly and mix well with the stock.
3. Stirring once in a while, heat mixture very slowly until the egg begins to harden.
4. Boil 5-6 min. without stirring.
5. Let stand 10 min. in a cool place so as to clear, then skim.
6. Strain through a fine sieve lined with several thicknesses of cheesecloth.

Notes:

1. What has been removed from the stock by the clearing process?
2. The material left in the sieve should be utilized in preparing meat balls or some other recipe.

Class Recipe for Cleared Stock

Ingredients:

- $\frac{1}{2}$ c. jellied or liquid stock
- $1\frac{1}{2}$ t. slightly beaten white of egg

Method:

1. Mix the ingredients together thoroughly.
2. With constant stirring, heat very gradually to the boiling point.
3. Cover, and boil 2 min. without stirring.
4. Let stand 5 min. in a cool place, then skim.
5. Strain through double cheesecloth.

Note:

$1\frac{1}{2}$ t. egg is a safe average for the class recipe; the egg may vary from $\frac{1}{2}$ to 2 t., according to the cloudiness of the stock.

INGREDIENTS FOR THE STOCK KETTLE

I. Fresh foods:

1. Vegetables: Almost all kinds can be used, including coarse parts of lettuce, cabbage, and celery not suitable for the table.

2. Meat, any kind: Use one kind alone or a mixture of two or more kinds, such as the following:

Beef	Mutton	Veal
Game	Poultry	Etc.

Stock should not be an expensive dish, since it can be prepared from left-over meats and from cheap fresh cuts; choose any of the cheapest and toughest cuts, such as the following:

Knuckle of veal	Shank or shin of beef
Rump bones of beef	Shoulder or neck bones of beef

The meat may well include cartilage and skin, also bone of any kind. Gelatin is an excellent food, hence it is very extravagant not to save bones, etc., for the soup kettle. It is well for soup meat to include some fat, since the cake formed by the fat when cold, if kept unbroken, aids in preserving the stock. The butcher and the cook should save for soup all the trimmings, such as the strip-end or tail of porterhouse steak. It is an economy both of time and of food value to grind all lean meat before adding it to the contents of soup kettle. The skin of mutton should be discarded, since it is too strong in flavor for soup.

II. Left-overs or cooked foods:

1. Vegetables, almost all kinds. Also use the liquid in which vegetables have been cooked, such as:

Asparagus	Carrots	Onions
Cabbage	Celery	Etc.

Some cooks disapprove of the use of cabbage water and potato water in the soup kettle.

2. Meat, bone, and cartilage from any of the following:

Roasts	Stews
Steaks	Etc.

3. Meat gravies.

4. Water in which meat has been boiled.

5. Cereals and their products, including the following (see Note 3):

Barley	Noodles
Rice	Macaroni

Etc.

Notes:

1. Fine flavor can be imparted to soup by proper combinations of almost all kinds of left-overs; they are also economical.

2. If meat is served once or twice each day, there is seldom any necessity of buying meat especially for the soup kettle.

3. The water in which any of the cereals or their products, such as rice or macaroni, have been cooked may be added to the contents of the soup kettle.

Fish Soup

(*An economical recipe*)

Ingredients:

Fish stock:

1 lb. fish bones and trimmings	3 cloves
1 qt. water	1 blade mace
1 onion	8 peppercorns
1 stalk celery	

1 c. milk

Flour paste for thickening

Method:

Use about the same method as for meat stock.

ADDITIONS TO SOUPS IN GENERAL

(*Such additions are either cooked or raw*)

By "soups in general" is meant stock, cream, fruit, and other soups. Pupil to check each ingredient suitable for use with cream soups.

I. Thickening agents (see Note 1):

Arrowroot

Bread

Cornstarch

Crackers

Eggs (yolks, whites, or whole eggs) Flour pastes (see Note 2):

Flour (white or browned)

Irish moss

Potatoes (mashed, etc.)

Sago

Tapioca, pearl

Cereals:

Barley, pearl

Corn meal

Farina

Noodles

Spaghetti

Vermicelli

Macaroni in any of the following forms:

Letters	Strips cut in rings
Stars	after being cooked
Shells	Etc.

II. Seasonings:

DRY SEASONINGS

Bay leaf

Celery salt

Curry powder

Garlic salt

Herbs, sweet (such as kitchen bouquet)

Onion salt

Parmesan cheese, grated

Pepper (paprika, etc.)

Salt

Spices (sometimes used in cream soups)

Sugar

(See Note 3)

VEGETABLES

Celery stalk or root

Onion

Parsley

Sweet green pepper

Tomato (juice, etc.)

Carrot

Potato

Turnip

Etc.

(See Notes 4, 5, and 6)

MISCELLANEOUS SEASONINGS

Beef extract

Butter or other fat

Catsup

Some fruits; for instance, orange juice adds zest to certain cream soups

Meat stock

Malted milk (sometimes added to meat broths or tomato bouillon)

Sauces (such as Worcestershire)

Sour apple or chopped ham (sometimes added to meat stock)

III. Garnishes:

Asparagus tips

Cauliflower flowerets

Celery tips (whole or chopped)

Cream, whipped

Eggs:

Slices of hard-cooked egg

Riced yolk or white of egg

Beaten white of egg

Egg balls

Egg custard, cut in fancy shapes (good in clear broths)

Fritter batter, pressed through a strainer and fried

Lemon or orange, thin slice

Paprika

Parsley (whole or chopped)

Peas, small green

Popcorn (good in cream soups)

Vegetables, boiled and cut in cubes or fancy shapes (good in clear broths):

Carrot

Turnip

Potato

Etc.

IV. Accompaniments of soup:

Cheese balls

Crackers and wafers, toasted (good baked with cheese)

Croutons (cubes, diamonds, etc.)

Crusty bread (see Note 7):

Bread sticks

French bread cut in slices 1" thick

Rolls

Etc.

Notes:

1. Most of the thickening agents contain considerable nourishment.
2. The water drained from rice and flour pastes is rich in starch; the economical cook uses it in combination with other materials as a basis for soup.
3. Dry seasonings are easier to handle than other seasonings, and probably just as good.
4. Chop the vegetables, cut in cubes, or use fancy cutters.
5. Extra flavor is secured by sautéing the vegetables in bacon or other fat.
6. Almost any fresh vegetable may be used.
7. Which of the breadstuffs are served in the soup? Which with the soup?
8. Appetizers or stimulants to digestion:
Dextrin as found in the listed breadstuffs (see IV)
Extractives found in meat stock

USES OF STOCK

1. Basis of many soups; this is the chief use.
2. Basis of many sauces and gravies.
3. Basis of aspic jelly.
4. Seasoning agent in stews and other meat and vegetable dishes.
5. Boiling medium; meat and vegetables are often boiled in stock so that they may gain flavor from the stock.

PART V
USE OF MEAT SUBSTITUTES

SUGGESTIONS FOR LESSONS

DRIED LEGUMES AS A MEAT SUBSTITUTE

38. Baked beans. Boston brown bread

EGGS AS A MEAT SUBSTITUTE

39. Escalloped eggs

CHEESE AS A MEAT SUBSTITUTE

40. Cottage cheese—choice of three types: sour-milk, buttermilk, sweet-milk

DRIED LEGUMES AS A MEAT SUBSTITUTE

Quick-Process Baked Beans

Luncheon

Baked beans

Boston brown bread

Combination salad (vegetable)

Apple sauce

Cookies

Tea

Method:

1. Pick over beans, wash, and soak 8-12 hr. or over night in cold water to cover.
2. Drain, and place in fresh cold water to which a little soda has been added, in the proportion 1 t. soda to 1 qt. water; boil 20-30 min. (See Note 5.)
3. Drain, and remove any traces of soda by rinsing with fresh water.
4. Drain, add hot water, and boil 1-3 hr., or until tender.
5. Place in baking dishes 2"-3" deep, add salt and a sprinkle of brown sugar, water sufficient to half cover the beans, and lay strips of raw bacon or ham on top.
6. Bake 2-4 hr. in a moderate oven; brown well on top.

Notes:

1. This is an excellent method when beans are to be prepared in very large quantities.
2. If preferred, vary the recipe by substituting the three following steps for the last three steps of the regular method:
 - a. Drain, add hot water and salt pork, and boil 1-3 hr., or until tender.
 - b. Add molasses or any other seasonings desired. Do not drain the liquid from the beans and do not add bacon or ham.
 - c. Bake 20-60 min. in a moderate oven; brown well.
3. Note suggestions as to the class recipe:
 - a. Pupil to soak beans over night, then parboil.
 - b. Instructor to boil beans tender, or to cook them in a fireless cooker over night.
 - c. The second day each pupil to complete the process as follows:
 - (1) Half fill with cooked beans a custard cup or a deep muffin tin.
 - (2) Add salt and $\frac{1}{4}$ - $\frac{1}{2}$ t. dark brown sugar.
 - (3) Add a thin slice of bacon or ham (bacon or ham "ends" can be purchased for a very little).
 - (4) Half cover with water, and bake 30 min. or longer, until brown and crisp; add more water if needed, but avoid too much water.
4. Boston, or "slow-process," baked beans require 8-12 hr. for cooking, and hence cannot be prepared by a class; see recipe in any cook book.
5. There is a serious objection to the use of soda in the cooking of dried legumes, inasmuch as heating in an alkaline solution is said to destroy the vitamine content of foods in general. If quick-process baked beans are served, they should be accompanied by foods, such as fresh vegetables and fruits, which are rich in water-soluble vitamins. Except in hard-water regions, soda is not essential in parboiling legumes; soda simply hastens the process.

Stewed Soy Beans**Ingredients:**

- 1 c. dry soy beans
- 3 c. cold water
- $\frac{1}{4}$ lb. salt pork
- 1 small onion, chopped and sautéed in a little extra pork fat
- 2 c. tomatoes
- Salt and other seasonings

Method:

1. Soak the beans 12 hr. in cold water.
2. Add pork and boil 4 hr., or until beans are tender; add enough water to keep beans from scorching. (Cook in a fireless cooker, if preferred.)
3. Add the remaining ingredients, simmer 15 min., and serve.

Note:

Lentils and other dried legumes are stewed in a similar way.

NOTES ON DRIED LEGUMES**I. Legumes more or less commonly eaten:****Beans:**

- | | |
|--------|---------------------------------------|
| Kidney | Soy (black, green, white, and yellow) |
| Lima | Navy (most used) |
| Cowpea | Etc. |
| Pinto | |

Lentils**Peanuts (raw)****Peas**

Pupil to determine the price per lb. of soy beans and other legumes.

II. Food value of legumes:

1. High protein content: Legumes compare favorably with meat as to protein; they are sometimes called poor man's meat.
2. High starch content: Legumes compare favorably with cereals as to starch; soy beans are an exception. Soy beans are very rich in protein and fat, but, unlike the navy beans, they are deficient in starch; they are a very good meat substitute.

III. Methods of cooking any of the legumes listed in I:

Baking in the usual way, or as a loaf

Boiling and stewing (season the legumes high, or serve plain)

Soup-making

Etc.

If a high-pressure cooker is available, the time limit for cooking any legumes is reduced to a minimum.

In general, the same recipes are used for lentils and peas as for navy beans. Soy beans, in addition to being cooked in the foregoing ways, are also made into soufflés, salads, or, after being ground into flour, are made into muffins and other flour mixtures. In the baking or other cooking of soy beans or peanuts, it is often well to bind them together by adding a little starch in the form of flour, cornstarch, or navy beans. Why?

Possible additions to any dried legume with any method of cooking are listed below. In general, the same additions may be made to fresh legumes. The names preceded by an asterisk are those of the ingredients ordinarily used in baking navy beans.

FAT		SEASONINGS
Corned beef, fat	Fat-meat substitutes:	*Molasses (see Note 1)
Corned mutton, fat	Butter	*Mustard
Pork (see Note 2):	Butterine	Pepper (such as cayenne or paprika)
Bacon or ham ends	Crisco	Peppers (such as pimentos or sweet green)
Fresh pork	Drippings (such as beef or bacon)	*Salt
*Salt pork (generally used)	Olive oil	*Sugar, brown or white (see Note 1)
	Snowdrift	
	Etc.	

Notes:

1. Sugar is generally omitted if molasses is used.
2. Note the following points with respect to fat:
 - a. It is well to use pork which is streaked with both fat and lean.
 - b. Additional salt must be used if salt meat is omitted from any given recipe.
 - c. The weight of the fat-meat substitute should equal the weight of the fat meat called for in the recipe.
3. Cloves and nutmeg are sometimes used as seasonings, but very sparingly.
4. Which of the foregoing additions are used in making the stew chili con carne?
5. *The Journal of Home Economics*, February, 1918, contains an article on "Nutritious Vegetable Soups" by Elizabeth Sprague. The following are among the soups for which recipes are given:

Black bean and kafir corn	Soy bean and kafir corn
Lima bean and canned corn	Soy bean and tomato
Lima bean and tomato	Cowpeas and feterita
Lima bean and soy bean	Cowpeas and kafir corn
Navy bean and feterita	Cowpeas and tomato

The ingredients for feterita and soy-bean soup are quoted as follows:

1½ c. feterita	1½ tb. flour
¼ c. soy beans	1 t. salt
1 tb. onion	Pepper
1 tb. corn	Water to make 1 pt. soup

Boston Brown Bread**Ingredients:**

1 tb.	1 c. rye flour
1 tb.	1 c. corn meal
1 tb.	1 c. coarse graham flour
$\frac{1}{2}$ t.	$\frac{3}{4}$ t. soda (less if non-acid molasses is used)
$\frac{1}{8}$ t.	$1\frac{1}{4}$ t. salt
2 t.	$\frac{3}{4}$ c. black (that is, acid) molasses
$1\frac{3}{4}$ tb.	$1\frac{3}{4}$ c. sweet milk or water
$\frac{1}{2}$ tb.	1 c. dried fruit, chopped, selected from the following, singly or in any combination:
	Currants, Zante
	Dates
	Prunes
	Raisins, black

Method:

1. Mix and sift the first five (dry) ingredients, then add to a mixture of molasses and water.
2. Add the fruit, and half fill greased molds, such as lard pails or baking-powder cans.
3. Cover, and steam 3 hr.
4. Remove covers, and bake $\frac{1}{2}$ hr. Serve hot or cold.

Notes:

1. Vary the flour as desired; for example, use $1\frac{1}{2}$ c. corn meal and $1\frac{1}{2}$ c. rye meal, omitting the graham.
2. By the addition of a little sugar the bread may be used as a pudding.
3. By increasing the soda to $1\frac{1}{2}$ t., 2 c. thick sour milk or buttermilk may be substituted for $1\frac{3}{4}$ c. sweet milk or water.
4. Omit the fruit, if preferred.
5. If preferred, grease the top of a double boiler and steam the bread in the double boiler.
6. Boston brown bread may be reheated in a steamer from day to day.
7. Boston brown bread before steaming usually ranges between a thin and a thick batter; the exact thickness depends on the kind of liquid used.
8. Unless a quantity of Boston brown bread is made at one time, it is very often expensive because of the fuel required.
9. Note suggestions as to the class recipe:
 - a. Level measurements of molasses, etc., are essential; also, scrape all molasses from the under side of spoon.
 - b. Place bread in a small baking-powder can, put on cover, and drop the can directly into a saucepan of water. Boil 35 min., remove cover of can, and bake 5 min.
10. **Pupil** to record results after experimenting as follows, using test tubes:
 - Heat a solution of soda and water.
 - Heat a mixture of soda, water, and sour milk or molasses.
 - Heat a solution of soda, water, and cream of tartar.
 - Mix soda and vinegar.

Luncheon

Baked beans

Boston brown bread

Lemon ice

Pickles
Sponge cake

Coffee

Class to serve the menu to a group of ten teachers or pupils at a minimum cost per plate; vary the menu, if preferred.

Cost of Supplies*(Pupil to supply data)*

SUPPLIES	QUANTITY	COST
Beans.....		
Butter.....		
Coffee.....		
Corn meal.....		
Cream.....		
Eggs.....		
Flour, graham....		
Flour, rye.....		
Flour, white.....		
Lemon juice.....		
Milk.....		
Molasses.....		
Pickles.....		
Pork.....		
Salt and ice.....		
Sugar (granulated and loaf)....		
.....		
.....		
Total.....		

EGGS AND FISH AS MEAT SUBSTITUTES

Luncheon

Escalloped eggs
Spinach salad

Prune whip

Baked potatoes
Bread and butter

Escalloped Eggs

Ingredients:

(4 servings)

<p>½ egg</p> <p>1 t. dash dash</p> <p>3 tb. 1 t. ½ t. dash dash ½ tb.</p> <p>2 t. ½ t.</p>	<p>4 eggs, hard-cooked in the shell</p> <p>Seasonings for the yolks:</p> <p>2¾ tb. cream (or milk)</p> <p>Salt (a little less than ¼ t.)</p> <p>Paprika</p> <p>Medium white sauce:</p> <p>1 c. milk or cream</p> <p>2 tb. flour</p> <p>1-2 tb. butter or a substitute</p> <p>¼ t. salt</p> <p>Paprika</p> <p>4 tb. grated or chopped cheese</p> <p>Buttered crumbs:</p> <p>4 tb. cracker crumbs</p> <p>1 tb. butter or a substitute</p>
--	---

Method:

1. Cut eggs in halves lengthwise.
2. Add cream, salt, and paprika to the yolks, whip until creamy and very light, then return the yolks to the whites.
3. Place the eggs in a single buttered baking dish or in four ramekins.
4. Pour the white sauce over the eggs, then spread with cheese.
5. Cover with buttered crumbs.
6. Bake in a slow oven 15-20 min., or until the cheese is melted and the dish is hot throughout.
7. Brown the crumbs by baking 1-2 min. under the flame of the broiling oven.
8. Serve either hot or cold.

Notes:

1. The following ingredients may be added to the sauce:

Chopped, hard-cooked white or yolk of egg	Chopped chicken
Chopped mushrooms	Curry powder
2. Escalloped eggs are good served cold for a picnic dish.
3. See page 48 for further suggestions as to escalloped protein foods.

Escaloped Oysters*(An expensive source of protein)***Ingredients:**

2 small oysters	1 c. oysters
	Medium white sauce:
2 tb.	1 c. milk or cream
$\frac{1}{4}$ t.	2 tb. flour
$\frac{1}{4}$ t.	2 tb. butter
dash	Salt and paprika
1 t.	4 tb. buttered crumbs

Method:

1. Place oysters, white sauce, and seasonings in a buttered baking dish in alternate layers.

2. Cover with buttered crumbs and bake in a slow oven only until hot throughout and crumbs are brown; do not allow mixture to boil.

Notes:

1. Possible additions to either creamed or escaloped oysters include the following, all such additions, as far as possible, to be made the last thing:

Whole eggs or yolks, beaten

Lemon juice

Chopped parsley

2. As a rule, escaloped oysters are prepared as follows:

a. Place oysters, seasonings, and broken crackers in a dish in alternate layers.

b. Add milk to cover, spread with buttered crumbs, and bake.

3. Are oysters a meat substitute? Compare oysters with meat with regard to both nutritive value and cost.

COMPOSITION OF PROTEIN FOODS*(Pupil to supply data)*

Food	PROTEIN	FAT	CARBOHYDRATES	ASH	WATER	FUEL VALUE PER LB.
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Calories
Almonds						
Beans, soy						
Cheese						
Eggs						
Oysters						
Peanuts						
Salmon						
Steak, round						
.....						

Luncheon

Escalloped salmon

Bread and butter

New York ice cream

Sautéed potato cakes

Pickles

Vanilla wafers

Coffee

Class to serve the menu to a group of ten teachers or pupils at a minimum cost per plate; vary the menu, if preferred.

Cost of Supplies*(Pupil to supply data)*

SUPPLIES	QUANTITY	COST
Bread
Butter
Coffee
Cream
Eggs
Ice and salt
Milk
Pickles
Potatoes
Salmon
Seasoning
Sugar (granulated and loaf)
Wafers, vanilla
.....
.....
Total

CHEESE AS A MEAT SUBSTITUTE

Luncheon

Cottage cheese with chopped pimentos
Bread and butter
Fresh fruit

Turkish pilaf

COTTAGE CHEESE

I. Types:

Prepare the three types named in the table below, then make statements as to comparative texture and flavor. Use the following ingredients in making each of the three types of cheese: 1 c. milk, salt, and 1 t. cream or $\frac{1}{2}$ t. butter.

CHEESE	TEXTURE AND FLAVOR
Sour-milk.....	
Buttermilk.....	
Sweet-milk.....	

II. Possible seasonings for any of the above-named cheeses:

Butter	Chopped foods:
Caraway seeds	Nuts
Cream, plain or whipped	Olives, green or ripe
Olive oil	Onions, Spanish
Paprika	Parsley
Salt	Pepper, sweet green
	Pickles
	Pimentos

If high seasoning is desired, use $\frac{1}{2}$ -1 c. olives or pimentos to 1 c. cheese.

III. Types of sour-milk cottage cheese:

1. From milk naturally soured.
2. From milk artificially soured; for example, in some cheese factories lactic acid bacilli are added to skim milk and the milk is allowed to stand just over night; in the morning it is clotted. This is a time-saving method.

Sour-Milk Cheese

Method:

This method is for use with either type of sour-milk cheese.

1. Secure milk that has just clabbered or thickened into a jelly; do not use milk newer or older than this.

2. Without stirring, heat the milk very slowly in a double boiler just until the curd hardens sufficiently to separate from the whey. The temperature of the milk at this separation point will vary from 98.6° to 140° F., or from 37° to 60° C., depending on the acidity of the milk. By no means allow the temperature to rise much above 140°–158° F., or 60°–70° C., or the curd will be tough. The milk must be quite acid in order to separate at 98.6° F., or 37° C.

3. Drain off whey through a sieve or cheesecloth bag; rinse curd with warm water.

4. Squeeze curd to remove all liquid, then season with salt, pepper, and butter or thick cream.

5. Knead with a wooden spoon until curd is finely ground, then beat until light and creamy, and pack in molds or form into balls.

Notes:

1. Sometimes, if the milk is well clabbered, cheese can be made without heating the milk at all; simply cut the clabber, then drain off whey.

2. The whey left from cheese-making is very rich in mineral matter, and contains lactose and the water-soluble vitamins. One authority suggests the use of whey in bread-making.

Buttermilk Cheese

Method:

1. Place buttermilk in a double boiler, heat gradually to about 130°–140° F., or 55°–60° C., then cool and drain through a muslin bag.

2. Season and serve the curd in the same way as sour-milk cheese.

Notes:

1. For making small quantities, the method is even simpler than that for sour-milk cheese, inasmuch as the quality of cheese does not depend so much on temperature.

2. Either natural or artificial buttermilk can be used for cheese-making.

3. Buttermilk cheese is palatable, sanitary, and economical. One bulletin¹ states that buttermilk cheese has about the same food value, pound for pound, as lean beef steak, which sells at twice the price.

Sweet-Milk Cottage Cheese

Method:

1. Clot sweet milk by means of junket tablets or rennet.

2. Beat the jellied milk with a fork.

3. Drain through a fine sieve lined with cheesecloth.

4. Season and serve the same as sour-milk cheese.

Notes:

1. This cheese has an advantage over sour-milk cheese in that the curd is never acid.

2. In what ways does junket differ from the product obtained in the first step above?

3. Rennin is extracted from the stomachs of young mammals, such as calves and young pigs. Junket tablets are a dry commercial preparation of rennin. Rennet is a commercial preparation of rennin in liquid form.

¹ Agricultural Experiment Station of the University of Wisconsin, *Bulletin 230*, page 24.

. PART VI

**HOMEMADE BREAD AS A MEANS OF REDUCING
THE HIGH COST OF LIVING**

SUGGESTIONS FOR LESSONS

SHORT-PROCESS BREAD

- 38. Bread made from any flour

BREAD DERIVATIVES

- 39. Making of several kinds of small-size derivatives, such as rolls, breadsticks, etc.

LONG-PROCESS BREAD

- 40. Sour-dough rye bread

SHORT-PROCESS BREADS

The following is given as a basic recipe. By the use of the outline, Appendix A, pages 165-170, barley, corn, and numerous other "war" breads can be derived from this wheat-bread recipe.

Short-Process White Bread

Ingredients:

(1 loaf)

- 1 c. water
- 1 t. salt
- 1 t. sugar
- 1 t. butter or other fat
- Compressed yeast, $1\frac{1}{4}" \times \frac{1}{2}" \times \frac{5}{8}"$ (see Note 1)
- About $3\frac{1}{2}$ c. bread flour

Method:

1. Warm the flour slightly if it has been stored in a cool place.
2. Bring the water just to the boiling point, then add the salt, sugar, and fat. (If milk is substituted for water, simply scald it.) Why is it wise to heat the liquid to so high a temperature?
3. Cool the liquid to lukewarm temperature, that is, to 98-99° F., or about 37° C. (A simple test for lukewarm temperature is as follows: Place a drop or two of the water on a sensitive part of the skin, such as the inner side of the wrist; if lukewarm, the water feels neither warm nor cool.)
4. Remove about $\frac{1}{4}$ of the lukewarm liquid; blend with the yeast, then return to the remainder of the liquid.
5. Gradually beat the warmed flour into the liquid.
6. Knead the dough 10-20 min. on a board.
7. Let stand in a warm place (78-79° F., or about 26° C.) until double in bulk; keep it covered so as to avoid drafts. A practical plan for the pupil, especially, is to set the bread to rise in the greased top of a double boiler; use the "wrist test" so as to keep the water in the lower part at lukewarm temperature.
8. Knead 5 min. and let rise the second time until double in bulk.
9. With almost no kneading, shape into a loaf, place in a baking pan $8\frac{1}{2}" \times 3\frac{1}{2}" \times 3"$, and let rise the third time until double in bulk.
10. Bake 45 min. in a moderate oven.

Notes:

1. There is no standard to-day for the size and price of compressed yeast cakes. As a rule, compressed yeast is much cheaper when bought in bulk; a penny's worth varies in quantity according to the dealer. Much package yeast is sold for \$.02-\$.03 per cake. The yeast called for in the given recipe is $\frac{1}{4}$ of the \$.02-\$.03 cake, or $\frac{1}{2}$ of the \$.01 package yeast formerly sold to a great extent.

2. The total time required for the recipe is 7 hr.; no sponge is used. One or both of the following methods may be used for reducing the time:

- a. Double the yeast; by thus doubling the yeast, bread can be made in $3\frac{1}{2}$ hr. (see class recipe below).
- b. Omit one rising, thus reducing the time to 6 hr.; bread made in this way is not so fine in texture. Note that the class recipe below omits one rising.

If a sponge is used in making the short-process bread, the time is lengthened. Note that short-process bread made with compressed yeast is better if no sponge is used.

3. Long-process bread can be made from this recipe if both the following changes are made:

- a. Use $\frac{1}{4}$ cake dry yeast in place of the required quantity of compressed yeast. If preferred, simply reduce the amount of compressed yeast; either compressed or dry yeast goes eight times as far in long-process bread as in short-process bread.
- b. Make a sponge at night, using only $1\frac{1}{2}$ c. flour; beat this sponge thoroughly and let stand all night at 66° F., or 21° C. In the morning knead in the remainder of flour. Complete the process as with the "short method," allowing two subsequent kneadings.

Long-process bread usually is made with dry yeast for the following reasons:

- a. Dry yeast is cheaper.
- b. Dry yeast keeps for weeks. Long-process breads made with compressed and dry yeasts are, however, equally good.

Long-process bread is cheaper than short-process bread; the latter is more expensive on account of the large quantity of yeast used. Short-process bread made with compressed yeast is less economical than long-process bread made with either compressed or dry yeast; compressed yeast is expensive.

4. In bread-making, study economy of time and of labor, as well as of money.

5. The exact quantity of water required in a given recipe for bread or for any other flour mixture varies according to the brand of flour used; this is an important point to remember.

6. It is well to grease the top slightly each time before setting bread dough aside to rise.

7. See table of graham and other wheat flours, Appendix, pages 220, 221.

Class Recipe for Short-Process Bread

Ingredients:

- $\frac{1}{2}$ c. water or milk
- $\frac{1}{2}$ t. salt
- $\frac{1}{2}$ -1 t. sweetening (see Note 3)
- $\frac{1}{2}$ t. fat
- Compressed yeast, $1\frac{1}{4}" \times \frac{1}{2}" \times \frac{5}{8}"$
- $1\frac{1}{2}$ c. sifted flour (see Note 2)

Method:

Use the method given on page 155, but omit step 8. Allow $3-3\frac{1}{2}$ hr. for making any bread, even nut-fruit bread; this includes 30 min. baking in a hot oven. Bake each loaf in a tin $5" \times 2\frac{1}{2}"$, bottom measurement.

Notes:

1. This recipe may be used for white, whole-wheat, sweet-rye, and various other short-process breads. The only ingredients that vary in quality are the sweetening and flour.

2. For the first bread lesson of the high-school course it is suggested that each pupil make a loaf of bread from one or any combination of the following flours:

White	Rice
Whole-wheat	Corn
Rye	Etc.
Barley	

In white wheat bread use all white or "bread" flour. In making any other bread use 10-25 per cent "substitute" flour, and bread flour to make up the required quantity. (See Appendix, page 167, "Principles of Substitution," II, a.) An even larger proportion of certain substitute flours may be used; for instance, a good loaf of bread results from the use of the following:

$\frac{1}{4}$ c. bread flour

$1\frac{1}{4}$ c. rye (or whole-wheat) flour

The total quantity of flour ($1\frac{1}{2}$ c.) called for in the recipe may vary slightly owing to differences in flour and in measuring.

A nut-fruit bread can be derived from any of the breads by working the following ingredients into the dough during the kneading process:

2-4 tb. chopped nuts

2-4 tb. raisins or currants

If all the flours are measured the previous day, as many as 8-10 kinds of bread can be prepared easily in the one lesson. All discussion of the lesson also should occur on the day previous to that on which the class recipe is baked.

3. Use $\frac{1}{2}$ t. granulated sugar in white bread; 1 t. molasses is suggested for whole-wheat bread, and 1 t. brown sugar for sweet-rye bread.

4. If preferred, use $\frac{1}{4}$ - $\frac{1}{2}$ c. liquid as the basis of a class recipe.

WHITE-BREAD DERIVATIVES

All white-bread derivatives are prepared from either of the following doughs:

Plain dough

Rich dough, that is, a dough containing more or less of the following ingredients:

Cocoa (for example, $1\frac{1}{2}$ tb.
dry cocoa to 3 c. flour)

Eggs

Fat

Fruit:

Citron, shredded or chopped

Currants or raisins

Orange peel

Nuts

Spice

Sugar

Etc.

THREE GROUPS OF DERIVATIVES

I. Derivatives of large size:

Breads (such as nut or raisin)

Cakes, including the following:

Brioche

Coffee cake

Dutch apple-cake

Election cake

Etc.

II. Rolls of various forms:

Braided

Butterfly

Cleft

Clover-leaf (using well-buttered
hands, squeeze off three small
balls of light dough into a
muffin tin; let rise, and bake)

Crescent

Envelope

Figure 8

Horseshoe

Hot-cross buns, filling the crevices of
the cross with any of the following:

Ornamental frosting (by use of
a pastry tube)

Poppy seeds

Sugar and cinnamon

Lady-finger

Parkerhouse, or pocketbook

Spherical

Swedish, or cinnamon

Twisted (in simple forms)

Notes:

1. Poppy seeds or chopped peanuts may be scattered over any of the rolls listed.
2. Caramel rolls result if Swedish rolls are baked in pans containing quite a quantity of butter and brown sugar or molasses.

III. Other derivatives of small size:

Breadsticks

Cheese straws or squares, made in the following way:

- a. Place grated cheese between two thicknesses of thin dough.
- b. Cut with a special cheese-straw cutter, and bake.

Doughnuts, twists, and crullers, fried

Lattice work, made as follows:

- a. Spread a thin oblong piece of dough with sugar, spice, and apple or other fruit.
- b. Place lattice work of dough over all, and bake.

Muffins:

- a. Baked in ordinary muffin tins.
- b. English.

Waffles (often more delicious than those leavened with baking powder)

Notes:

1. Many of the large and small derivatives mentioned may be prepared also from any of the following-named bread doughs:

Graham

Rye or barley

Whole-wheat

Etc.

Envelope rolls and a few other derivatives may be prepared also from baking-powder biscuit dough.

2. The instructor is to provide a large slice of light bread dough for each pupil; each pupil should prepare from this dough 8-10 small derivatives.

MISCELLANEOUS BREADS

Long-Process Sour-Dough Rye Bread

(Between 3:1 and 4:1)

Ingredients:

(1 loaf)

$\frac{1}{2}$ c.	2 c. lukewarm water
$\frac{1}{2}$ t.	$2\frac{1}{2}$ t. salt
$\frac{1}{2}$ t.	2 t. sugar
1 t.	4 t. fat (such as butterine)
$\frac{5}{8}'' \times \frac{3}{8}'' \times \frac{3}{16}''$ ($\frac{1}{12}$ of a \$0.01 cake)	Compressed yeast, $1\frac{1}{4}'' \times \frac{3}{8}'' \times \frac{1}{4}''$ (one-third of the package cake generally sold in former times for \$0.01)
1 t.	4 t. caraway seeds
$1\frac{1}{4}$ c.	5 c. rye flour
$\frac{1}{4}$ c.	2 c. bread flour
2-4 tb.	$\frac{1}{8}$ - $\frac{3}{4}$ c. bread flour for flouring the board during the two periods of knead- ing (use enough flour for easy kneading, but avoid too stiff a dough)

Method:

1. Blend the yeast with 1 tb. lukewarm water; use 1 t. water in the class recipe.
2. Add the salt, sugar, fat, caraway seeds, and remainder of water.
3. Add 5 c. rye flour and 2 c. bread flour and knead on board 10-20 min.
4. Place in a greased bowl, grease top of dough slightly, cover, and let rise in a warm place 2-3 hr.; allow $1\frac{1}{2}$ hr. for the class recipe.
5. Knead on a board 3-5 min.
6. Place in a greased pan $9\frac{1}{2}'' \times 4'' \times 3''$, grease top surface of loaf, and let rise over night; do not cover the loaf at all, or the top surface is likely to be roughened. The slow rising develops the sour flavor.
7. Without cutting down the bread, bake the first thing in the morning, or as soon as the loaf is twice its original bulk; bake about 1 hr. in a moderate oven. For the class recipe allow 30-40 min. in a hot oven; do not bake until it rises even with the top of a $5'' \times 2\frac{1}{2}''$ tin (bottom measurement). The large recipe when baked should extend to the top of the tin or a little above the top.

Notes:

1. Start work with the large recipe the latter part of the afternoon.
2. Sour-dough rye bread is a cheap recipe in that the quantity of yeast required is small.
3. A coarse and almost black sour-dough rye bread known as pumpernickel is made from pumpernickel flour, a coarse product obtained by grinding the whole rye kernel. The black color of the bread is due to the slow rising process as well as to the use of molasses, breadcrumbs, and pumpernickel flour (about as dark as graham flour).

Self-Rising Bread¹**Ingredients:**

(1 loaf)

- 1 c. milk
- 1 t. salt
- 1 tb. sugar
- 2 tb. white corn meal
- 1 tb. fat (may be omitted)
- Flour

Method:

1. Scald the milk, then cool to lukewarm temperature.
2. Add the salt, sugar, and corn meal, place the mixture in a fruit jar or a heavy crock or pitcher, cover, and surround the receptacle by water at about 120° F., or 49° C.; water at this temperature is the hottest in which the hand can be held without discomfort. Allow this "leaven" to stand 6-24 hr., or until it shows signs of fermentation; if it has fermented sufficiently, the gas can be heard as it escapes.
3. Make a soft sponge by adding 1 c. flour to the leaven, beat thoroughly, and let stand at 120° F., or 49° C., until very light.
4. Add fat melted and cooled, then gradually add more flour to make a dough so stiff that it can be kneaded without sticking to the hands or the board.
5. Knead 10-15 min., place in a pan, let rise until about two and one-half times its original bulk, then bake.

Notes:

1. Self-rising bread is commonly called salt-rising bread. The gas produced by bacteria is the chief leavening agent; this absence of commercial yeast means a low cost of bread.
2. Compare the size of this loaf with a loaf of ordinary bread made on a basis of 1 c. liquid; note that self-rising bread is never so light as bread raised with commercial yeast.
3. Make the following changes in the recipe if more than one loaf of bread is desired:
 - a. For each additional loaf, add the following ingredients to the leaven:

1 c. water	1 tb. sugar
1 t. salt	1 tb. fat
 - b. Use extra flour for each additional loaf (including 1 c. extra flour added to the "sponge").
4. The secret of success with salt-rising bread is to keep it warm throughout the process of making; for example, in the second and third steps of the given method maintain the temperature at 120° F., or 49° C., as far as possible, for the full period of rising. Avoid cold draughts throughout the process. In case the flour in the bin is cold, warm it slightly before using.
5. The use of $\frac{1}{4}$ - $\frac{1}{2}$ the given recipe is suggested for class work.
6. Compare salt-rising bread with ordinary bread with respect to the following points:

Cost	Texture of baked loaf
Temperature used in rising	Taste of baked loaf
Rapidity of rising	

¹Adapted very largely from U.S. Farmers' Bulletin 807, "Bread and Bread Making in the Home," by Hunt and Wessling.

7. Discuss the history of self-rising breads, and the evolution of leavened breads from them.

8. A salt-rising yeast is in the market to-day; it is a dry product composed of the type of bacteria which has been found especially dependable in making salt-rising bread.

Corn-Meal Sweet-Potato Bread¹

Ingredients:

1½ qt. fine corn meal	}	or	{	2½ qt. fine corn meal
2½ qt. wheat flour				1½ qt. wheat flour
2 t. salt				
1 pt. mashed sweet potatoes				
1 cake yeast				

Method:

1. Mix 1 pt. each of the corn meal and the flour.
2. Add warm water to form a stiff batter, also the yeast cake, mixed with a small quantity of water. Keep this sponge in a warm place until light.
3. Scald the remainder of the meal with boiling water, cool, and add it, together with the potatoes, salt, and remainder of flour, to the sponge. The dough should be just thick enough to knead without danger of its sticking to the board. Experience will teach how much water to use to secure this end. Knead well, and set in a warm place to rise.
4. When it is light form into loaves, put into bread pans, and let rise until double in bulk. Bake in a moderate oven.

¹Adapted from *U. S. Farmers' Bulletin 565*, "Corn Meal as a Food and Ways of Using It," page 15, recipe for South Carolina yeast corn bread.

APPENDIX

APPENDIX¹

PART A. SUBSTITUTES FOR THE CHIEF WHEAT FLOURS SUBSTITUTES

Chief wheat flours are white (that is, bread and pastry flours), whole-wheat, and graham.

Group I. Dry materials (flours and meals):

- *Alfalfa (flour or meal)
- *Banana, dried, ripe or unripe
 - Barley
 - Bran (wheat)
 - Buckwheat
- *Cassava
 - Cereal, cooked or semi-cooked in the factory (such as flaked rice, rolled oats, shredded wheat, etc.). Roll or grind to a meal or flour.
- *Chestnut
 - Corn (meal, flour, and starch)
 - Cottonseed (flour and meal)
- *Dasheen
 - Left-over breadstuff (such as bread, muffins, etc.; see Note 5)
 - Legume, such as:
 - Dried pea
 - Peanut (flour and meal)
 - Dried navy and soy bean
- *Millet
 - Nut (such as almond)
 - Oat (meal, flakes, and flour)
 - Potato, white or sweet
- *Rape
 - Rice, polished or unpolished (flour made from polished rice yields a very white cake or bread)
 - Rye
- *Sago
- *Sorghum (such as kafir)

Group II. Moist materials:

Starchy vegetables, boiled and mashed, including the following:

- | | |
|--|------------------------|
| Artichoke, Jerusalem | Potato, sweet or white |
| Dasheen | Yam |
| Chestnuts, boiled and mashed | |
| Left-over cooked cereals (such as corn meal, rice, oatmeal, or farina) | |
| Raw bananas, mashed (useful in cookies, etc.) | |
| Pumpkin or squash, cooked and mashed | |

¹In this appendix pupil is to supply data for any problems (tables, etc.) given.

Notes:

1. All members of both groups are useful in flour mixtures in general, including yeast breads, baking-powder biscuits, muffins, cakes, etc.
2. The materials the names of which are preceded by an asterisk are among those less commonly sold. If information about these is desired, send for various government bulletins. Alfalfa flour or meal is made from alfalfa leaves and upper stalks. It is a comparative novelty as yet and its use, as well as that of certain other materials listed, is still more or less experimental. Consult bulletins of the Kansas Agricultural Experiment Station.
3. Group I materials are uncooked except in the case of the left-over breadstuffs and the breakfast cereals. Group II materials are cooked, except in the case of bananas.
4. An excellent fine flour results from grinding rolled oats in a handmill or in a fine-blade meat-grinder.
5. Dry left-over breadstuffs, then grind in a meat-grinder to either fine flour or crumbs; a grinder is not essential in the preparation of crumbs.
6. Most of the Group I substitutes for wheat are ground either fine or coarse; oats, barley, rye, corn, and peanuts are so treated. Oats are ground into fine flour, into fine steel-cut oatmeal, etc. Corn is ground into a fine flour, yellow or white, as well as into granulated corn meal, yellow or white; corn flour is not to be confused with "cornstarch." Note economy in using broken rice for flour. A handmill is very useful in the home for preparing various flours and meals, such as soy-bean flour or meal and nut meals.

PRINCIPLES OF SUBSTITUTION*I. Function of viscous substances in flour mixtures:*

In substituting other materials for wheat the chief difficulty is to find a substitute for the gluten (viscous and elastic) of wheat. Barley and other wheat substitutes contain less gluten than wheat flours.

Three viscous substances used in flour mixtures are:

- a. Gluten of wheat, etc.
- b. Albumin of egg
- c. Stiff cooked starch paste¹ (Suggested as a substitute for either gluten or egg in baking. Not commonly used. Used cold.)

Functions of all three viscous substances are:

- To bind particles together
- To give lightness, because they hold in the gas of leavening agents

II. Quantity of wheat substitutes dependent on the quality of viscous substances present:

- a. The porous texture of flour mixtures not containing eggs, such as the following, depends only on the gluten content of the flour:
 - Biscuits
 - Crackers
 - Pastries
 - Yeast breads

¹ *Journal of Home Economics*, December, 1917, pages 537-538.

Rules for substitution: As a general rule, any item listed in either Group I or II can be substituted for 10-25 per cent of the wheat flour ordinarily used in these mixtures; suit convenience and taste, and use the substitutes singly or in any combination. In some cases the proportion may run to 50 per cent or higher. Many flours and meals (Group I) cannot be used singly in making good yeast bread. Why? Name some such flours.

- b. The porous texture of flour mixtures containing eggs, such as the following, depends both on the gluten content of the flour and on the amount of egg:

Cakes
Muffins
Etc.

Rules for substitution: In the majority of cases, wheat flour can be displaced entirely by substitutes from either Group I or II; use the substitutes singly or in any combination.

- c. The porous texture of flour mixtures made with or without eggs, and containing less than 30 per cent of wheat bread flour, depends chiefly on the use of a cooked starch paste made from part or all of the "bread" flour used and from the water or other liquid used for wetting. This paste has tenacity enough to hold the gas.

Notes:

1. (a) In substituting dry materials (Group I) for wheat flours, substitute an *equal weight*, not an equal volume; for example, omit one-fourth of the wheat flour from a recipe and in its place use an equal weight of barley, corn, or other flour. Equal measures of various flours differ in weight (1 c. wheat bread flour weighs about 4 oz.); work is made simple by referring to the following list:

For 1 cup of white flour use $1\frac{1}{4}$ cups barley flour.
 For 1 cup of white flour use $\frac{3}{4}$ cup buckwheat.
 For 1 cup of white flour use $\frac{3}{4}$ cup corn meal.
 For 1 cup of white flour use 1 cup corn flour.
 For 1 cup of white flour use $\frac{3}{4}$ cup rice flour.
 For 1 cup of white flour use $\frac{3}{4}$ cup oat flour.
 For 1 cup of white flour use $\frac{2}{3}$ cup potato flour.

- (b) In substituting moist materials (Group II) for wheat flours, do *not* substitute by weight, since allowance must be made for the varying water content of the "moist materials" due to cooking, etc.

2. The flour and crumbs prepared from left-over breadstuffs are a great source of economy in gingerbread and other flour mixtures. Use 25-50 per cent in muffins and 25-33 per cent in yeast graham bread.

3. The best cooks recommend the following when wheat flour is the only flour used:

Bread flour in all flour mixtures made without eggs

Pastry flour in all flour mixtures containing eggs

Pupil to explain the two statements in the light of the foregoing outline. Note that the gluten of pastry flour differs both in quantity and in quality from that of bread flour.

GUIDE TO THE USE OF SUBSTITUTE FLOURS*

NAME	PERCENTAGE IN FLOUR MIXTURES WITHOUT EGGS (Such as yeast mixtures)	PERCENTAGE IN FLOUR MIXTURES WITH EGGS (Such as baking-powder mixtures)	COLOR, FLAVOR, ETC.	MEANS OF OVERCOMING DISAGREEABLE CHARACTERISTICS
Barley flour	25-50 per cent, sometimes more	35-100 per cent (excellent pastry has been made from the use of 100 per cent barley flour)	Flavor not liked by all. Dark color. $1\frac{1}{2}$ c. = 1 c. wheat bread flour in weight.	The addition of a very little cinnamon or nutmeg is said to remove all undesirable flavor.
Buckwheat flour	25 per cent or more	35-100 per cent	Dark color. Good flavor. $\frac{1}{2}$ c. = 1 c. wheat bread flour in weight.	
Chestnut flour or meal	See nut meal		Drier and less fatty than meal prepared from most other nuts.	
Corn meal	25-35 per cent, sometimes more	25-50 per cent, sometimes more	Lacking in gluten. Bread crumbly and friable.	Much better results are obtained when granulated meal is scalded with boiling water and allowed to stand a while before being used.
Cottonseed flour or meal	10-30 per cent	10-30 per cent	Dark color. Strong taste if flour is used in maximum quantity. Flavor is especially strong when bread is hot. Rich in protein.	Use molasses for part of wetting. Add ginger or other spices and dried fruit to make a good war cake.

Nut meal	Not more than 25 per cent	Not more than 25 per cent	Excellent flavor. Rich in fat and protein. Many nut meals are expensive, especially almond. Bread, etc., keep fresh a long time.	Add $\frac{1}{4}$ t. salt to every cup of nuts, in addition to salt in standard recipe, to develop full flavor of nuts. Use little or no additional fat.
Oat meal	25 per cent of coarse meal; the finer the meal, the greater the proportion of oatmeal	50-100 per cent	Good flavor. Flour mixtures keep fresh a long time and are finer in texture if only a small amount of wetting is used. Volume of loaf small in proportion to weight.	Volume increased by use of extra leavening agent, and full amount of liquid. This, however, makes a coarse-grained loaf.
Rice flour	25 per cent	25-100 per cent (cream puffs and sponge cake are very successful when made wholly of rice flour)	Most deficient of all cereals in gluten.	Cook wheat flour used to a paste in water. Use twice as much yeast as with wheat flour. Use additional eggs with baking-powder mixtures.
Rye flour	25-100 per cent	25-100 per cent (may be combined with corn meal in the proportion of two to one of corn meal)	Dark color. Sour flavor.	The quicker the process of rising, the less sour the bread.
Sorghum flour, such as kafir corn	Not more than 25 per cent in yeast mixtures	25-50 per cent, sometimes more	Said to be of good flavor, somewhat resembling rye. Lacking in gluten. Nutritious.	

* Table prepared by Mary D. Chambers, B. S., A. M.

FURTHER NOTES ON SUBSTITUTES FOR WHEAT FLOUR

1. Groups I and II of substitutes are often of special importance in the following instances:
 - a. When, for any reason, there is a lowered supply of wheat.
 - b. When the diet requires any of the following:

Variety

Increase in mineral content

Increase in laxative elements

The last two requirements are best met by the use of the whole-grain products, such as rye, oats, barley, or unpolished rice. (Note similar values of the whole kernel of wheat.)

2. For the following reasons the items listed in Groups I and II are not necessarily substitutes for wheat with respect to food value:

- a. Wheat flours have varying food value; compare white flour with graham flour (see list of flours, page 221).
- b. The following Group I flours and meals have high protein value; if used in bread, etc., they must be given credit in the meal for their value as meat substitutes:

Alfalfa flour

Legume flour (navy or soy-bean, etc.)

Nut meal (such as almond)

Cottonseed flour

Gluten flour, a wheat product, also has high protein value.

3. Better results are obtained when two, three, or more substitute flours are combined in making bread, muffins, etc. The following flour combinations are among those which have been found successful:

YEAST ROLLS

80 per cent wheat

15 per cent corn

.5 per cent rice

YEAST ROLLS

50 per cent barley

30 per cent rye

20 per cent rice

YEAST BREAD

50 per cent barley

20 per cent corn

15 per cent rice

15 per cent buckwheat

Good muffins are made by using a mixture of rye flour and fine steel-cut oatmeal. Barley and oat flour or meal make a very good combination for any flour mixture.

4. All substitutes for wheat flours require more salt and longer cooking than wheat flours.

5. Where less than 30 per cent of wheat flour is used in making yeast breads, it has been found well to double the quantity of yeast.

6. Disguise rye and other strong-flavored flours by means of any of the following:

Chocolate

Brown sugar (for use with rye and barley flours)

Spice

Orange peel (good in rye rolls)

Molasses

Etc.

7. Note possible exercises for the pupil:

a. Add to Groups I and II of substitutes for wheat.

b. Discuss the substitutes for wheat with respect to cost, palatability, popularity in the various countries, etc.

c. Prepare an exhibit; fill small bottles or boxes with samples of the various flours and meals.

d. Make a collection of recipes for the use of the various substitutes; see magazines, etc. Pupil is also to devise recipes of her own.

PART B. MISCELLANEOUS THRIFT SUGGESTIONS

THE USES OF LEFT-OVER FOODS

Left-overs are a great source of economy in the home; they are especially valuable in the preparation of made dishes, such as the complete-dish series and casserole dishes in general. They may be used in the following ways:

I. Meat:

- Salads
- Escalloped dishes
- Soufflés
- Stew or soup (for example, left-over meat and bones from platter are good for soup stock)
- Hash
- Loaves, baked or steamed
- Sliced meat, served cold
- Creamed meat on toast
- Etc.

II. Sour milk, skimmed or whole:

- Cottage cheese
- Flour mixtures

III. Fats:

- Drippings (of use in various cooking processes; see page 173)
- Raw meat trimmings (when rendered, of use in frying, etc.; see page 174)
- Left-over butter, such as that left on butter plates (if clean, to be used for cooking; keep in a wide-necked jar)

IV. Vegetables, cooked or raw:

- Salads
- Escalloped dishes
- Soufflés
- Addition to stews and soups; for example, the leaves and inferior stalks of celery are a good addition to the soup-kettle
- Sautéed or otherwise reheated dishes
- Etc.

V. Breakfast cereals in general:

- Mush; baked, fried, or sautéed
- Addition to soup or stew
- Addition to muffins and other flour mixtures
- Partial thickening for sauces (see use of farina in white sauce)
- Meat balls
- Meat loaves
- Etc.

VI. Rice or hominy:

Croquettes
Escalloped dishes containing cheese, meat, tomatoes, etc.
Puddings

VII. Stale bread:

Puddings (such as bread)
French toast
Stuffing of poultry and fish
Crumbs, both dry and buttered:
 Escalloped dishes
 Breading of chops, etc.
 Coating of fried articles
Toast:
 Plain toast
 Toast cases or croustades
 Croutons
 Toast points and sticks

Notes on the use of stale bread:

1. Bread, biscuits, and cake which are not too stale may be freshened either by moistening slightly with water, milk, or melted butter and heating in the oven, or by placing in a steamer over boiling water and steaming 2-3 min. Such steamed cake is palatable served with a sauce as a pudding.

2. Stale bread, such as white, rye, graham, or bran, may be treated as follows:

- a. Heat in a slow oven until very dry and a golden brown.
- b. Cool, and grind to a very coarse meal, or crush with a rolling-pin.
- c. Serve with cream and sugar as a breakfast cereal.

3. For the grinding of stale dry biscuits, bread, etc., into flour, see page 166, Note 5.

4. Dried bread crumbs are prepared as follows:

- a. Collect crusts and broken pieces of stale bread and toast.
- b. Break into small pieces and dry thoroughly in the open air or in a slow oven, such as a warming oven; brown the bread slightly or not, as desired.
- c. Pass through a meat-grinder, or roll on the molding board.
- d. Sift, if desired, using a flour-sifter.
- e. Store in covered glass jars in a dry place; if jars are air-tight, the crumbs keep indefinitely.

Stale crackers may be treated in the same way as bread, but should be kept in separate jars. It is possible to buy cracker crumbs already prepared; matzoh meal is usually an inexpensive form of these.

Note the chief uses of dried crumbs:

Preparation of buttered crumbs (see page 51)
Rolling of croquettes and other foods to be fried or sautéed

These fine dry crumbs (bread or cracker) are not to be used in the following:

Stuffing of fish, poultry, and meat
Croquettes (except on the surface)
Escalloped dishes (except on the top surface)

Fine crumbs make the three foregoing dishes heavy; use instead coarse crumbs, stale, but not very dry.

HOMEMADE EXTRACTS**Orange or Lemon Extract****Ingredients:**

Essential oil, $1\frac{2}{3}$ oz.
Rind (just the oily part), $1\frac{2}{3}$ oz.
Absolute alcohol enough to make 1 qt.

Orange, Lemon, or Other Citrous-Fruit Extract**Ingredients:**

95 per cent alcohol (a fat solvent)
Rind of citrous fruits, chopped, secured as follows:
a. Wash and dry fruit (such as orange, lemon, or tangerine).
b. Remove only the colored and oily part of the rind, rejecting the white skin.
c. Grind the oily rind in a meat-grinder.

Method:

1. Place the ground rind in bottles, cover with twice its volume of 95 per cent alcohol, and shake well.
2. Add a glass stopper to bottle, and let stand not longer than 2-3 days. Why does the alcohol change color?
3. Strain into clean bottles, using filter paper if desired; discard rind.

Note:

Vanilla extract can be secured from ground vanilla beans by much the same process.

FATS**I. Drippings:**

These are used chiefly in sautéing and as a butter substitute for seasoning vegetables. Keep them covered in a cool place in earthen or other jars. Drippings, numerous in kind, are the fats (more or less strongly flavored) left over when certain methods of cooking meats are employed, such as the following:

Boiling: Use the fat skimmed from water in which poultry, corned beef, etc., have been cooked; such corned-beef fat keeps indefinitely.

Broiling

Roasting: Use the fat skimmed from the gravies, such as:

Chicken

Pork

Veal

Sautéing:

Ham or bacon

Pork

Sausage

It is often desirable to secure additional flavor for drippings by cooking seasonings in them; note the use of onion, salt, pepper, summer savory or thyme, etc., in so-called "savory" drippings. Mutton drippings (usually ignored), if highly seasoned, are economical.

Drippings may be clarified by either of the methods (page 87) used to clarify frying fats.

II. Rendered fat:

This is fat tried out from the uncooked fat of meat, and is of chief use for frying.

Method:

1. Cut the fat into small pieces of uniform size; or a still better plan with most fats is to grind them fine in a meat-grinder. Use any of the following:

Beef suet

Chicken or goose fat

Pork kidney fat (leaf lard results from this)

Salt-pork fat

Trimnings from steaks, roasts, etc. (See Note 1)

Remove all bits of skin or lean meat from the fat before grinding, since they are likely to scorch by sticking to the kettle, thereby imparting a scorched flavor to the fat.

2. Cover with cold water and, stirring often, heat slowly until all the fat separates from the connective tissue, and the connective tissue (scraps or cracklings) remaining is shriveled, light brown, and floating on the fat. Heat until no water remains—that is, until all signs of boiling and spattering cease. A low temperature is essential in heating the fat. A double boiler is often used so as to insure a low temperature; or sometimes the fat is heated in the oven.

3. Cool slightly and drain through a sieve lined with cheesecloth or muslin; press the scraps of connective tissue so as to remove all fat.

4. Pour into pails, crocks, cans, or jelly jars; let stand until hard, then cover and store in a cool dry place.

Notes:

1. Be sure that the butcher delivers all trimmings with the meat order, that is, all trimmings paid for.

2. An excellent method for removing the distinctive flavor from beef fat is to heat it in skim milk rather than water; use $\frac{1}{2}$ c. milk to each lb. fat. See step 2 above. Such rendered fat is satisfactory in biscuit dough, and is often a butter substitute, even being used on bread. (Test this use of skim milk with strong fats other than beef, such as mutton.)

3. Mutton suet, if treated as follows, is a great source of economy in the home:

a. Grind 2 c. mutton suet and 1 c. leaf lard in the meat-grinder.

b. Mix with whole milk and render in a double boiler; use $\frac{1}{2}$ c. milk to each lb. of the mixed fats.

4. If water or milk is not added to the fat at the beginning, it is well to add hot melted lard or other fat; otherwise the fat is likely to burn before it is much melted.

5. Estimate the cost of fat per lb. by weighing the fat before and after rendering; compare cost with the cost of commercial fats.

6. Beef fat is a hard fat; likewise mutton. The housekeeper can often make any hard fat more usable by mixing softer fats with it, such as lard or vegetable oils.

7. Cracklings contain considerable fat; use them as follows:

As an addition to corn-meal mush

As shortening in corn bread, etc. (mash the cracklings fine before using)

8. Study the structure and composition of beef suet or other fat meat; use a microscope if one is available. Define connective tissue.

GENERAL THRIFT HINTS FOR HOUSEKEEPERS

I. Protein foods in general:

1. Use meat substitutes, such as eggs, milk, cheese, fish, and legumes; see list, page 48.
2. Note the extravagance of using protein foods as fuel in the body; a small amount of protein is essential each day for building purposes only.

II. Milk:

1. All of the following are cheap sources of protein, the last three being especially useful in cooking:

Whole milk, essential in children's diet (a cheap food even at \$0.12-\$0.15 per qt.)

Skim milk (sometimes obtainable for \$0.12 per gal.)

Sour milk

Buttermilk (often an economy if used in place of milk)

Any one of the following whole-milk dishes is a possible basis for a meatless meal:

Cream soup

Popcorn and milk

Custard

Bread and milk

It is often economical in baking or other cooking to use either condensed or powdered milk; this is true in the classroom as well as in the home. (Note that in drying skim milk to a powder all the nutrients, including the valuable mineral matter, are saved.) The substitution of water for milk in baking and other cooking is often a source of economy; note, however, that the food value is reduced.

2. Skim milk, as used in the following dishes, often has more or less value as a meat substitute in the diet:

Bread and milk

Cereals cooked in milk

Creamed dishes

Cocoa and chocolate, made with all milk

Escalloped dishes

Some cream soups

Desserts:

Junket

Milk sherbets

Puddings:

Bread

Cornstarch

Rice, or ground cereal

Tapioca

3. Buttermilk and sour skim milk are used in various recipes; for instance, in preparing cottage cheese, also in griddle cakes and other flour mixtures. Buttermilk, too, is sometimes made into a soup; it is also good as a beverage. As a rule, the combination of sour milk and soda is cheaper than sweet milk and baking powder.

III. Eggs:

1. Store eggs, preferably in water glass, for use in winter.
2. Buy cold-storage eggs for cooking in the winter time.
3. Use egg substitute (a powder) at times. It is a leavening substitute for eggs, but it differs greatly from eggs in food value.

IV. Sweets:

1. Conserve fruits by drying, canning, making of jelly, etc.
2. Prepare economical candies; fruit candies, one of the most popular of such candies, include the following:

Glacé fruit (such as taffy apples and other fruit)

Orange straws and other homemade candied fruit

3. Develop sweetness in prunes, baked apples, and other fruits by *very* long slow cooking. Add no sugar to the fruits in the beginning.

V. Breadstuffs:

1. Which is cheaper, homemade or bakers' bread? It is a recognized fact that boarding houses save very much by making their own breadstuffs; many times the same rule applies to the home. The following are made more cheaply at home:

Biscuits	Cakes	Pies
Bread	Cookies	Etc.

2. If buying bread, buy the stale loaves if possible, for the following reasons:

- a. Stale bread is more wholesome.
- b. Bread a day old or older often costs only half as much as fresh bread; it is especially good for sandwiches.

As a general thing, stale bread can be purchased at the bakery only, not at the grocery.

3. Note the economy of corn pone and other flour mixtures made without yeast or other commercial leaven; many leavens are expensive.

VI. Vegetables:

1. Conserve vegetables by drying and canning.
2. Cook weeds as greens.
3. Pare potatoes, etc., with thin parings.

VII. Fats:

1. Avoid the most expensive fats, that is, olive oil, butter, and cream; note that top-milk is an inexpensive form of cream. Use the less expensive fats in cooking; most of the following, many of which can be used as butter substitutes, are among the cheaper fats:

Animal fats:

Bacon or ham ends
Lard
Oleomargarine
Salt pork
Suet
Tallow
Chicken or goose fat
Savory drippings (such as freshly rendered leaf lard and suet, pleasantly flavored with onion, thyme, and other savory herbs, making a possible butter substitute)

Vegetable fats:

Nut oil (such as peanut or almond)
Corn oil (such as Mazola)
Cottonseed oil (such as Wesson)
(Wesson and other oils can be used in baking pancakes, baking-powder biscuits, pastry, cakes, etc.)

Various commercial derivatives of animal fats and vegetable oils:

Cottosuet

Crisco	} Both composed of vegetable oil which has been converted into the solid form by chemical means
Crusto	
Snowdrift	

 Nut margarine (coconut oil, in part)

- 2 Use drippings for sautéing and home-rendered fat for frying (see pages 173, 174).
3. Use butter substitutes, not butter, for greasing tins and other dishes.
4. Gravy can often be substituted for butter in a meal.
5. Jams and jellies are often a means of saving butter on bread, as in the making of sandwiches.

6. Milk, or a mixture of milk and cream, is often a source of economy as a "butter extender." Beat 1 pt. milk into 1 lb. butter by means of a Dover beater. Add salt, or serve as "sweet butter." Add coloring if desired, then chill. A little dissolved gelatin is sometimes whipped in with the milk. Note that "extenders" increase the bulk of butter, but decrease its food value per unit of volume.

VIII. Miscellaneous foods:

1. Make homemade vinegars, such as the following:

Cider and other fruit vinegars

Flavored vinegars, for use in salads, etc.:

Celery vinegar: Add celery seed and fresh celery to common vinegar.

Onion vinegar: Add onions to common vinegar.

Tarragon vinegar: Add a bunch of tarragon leaves to common vinegar.

2. Use cheaper baking powders, if they are recommended by food experts.
3. Economize in coffee by boiling a small quantity of chicory in the pot with the coffee; \$0.05 is an average price at a grocery for one "stick" of powdered chicory.
4. Use flavorings; the use of flavoring is economical, for by it inexpensive foods can be varied and made palatable. Use citric acid crystals in place of lemon many times.
5. In many cases substitute sheet for box gelatin.

IX. Economy in buying:

1. Trade at cash stores; the credit system is paid for by the customer.
2. Go to market, do not telephone; quality is assured in this way. The telephone costs, too. Carry a basket to market if charge is made for delivery; note the value of the "cash-and-carry" stores.
3. Trade at the grocers' late Saturday night and thereby secure reduction on perishables.
4. Buy foods in quantity, and at wholesale prices if possible.

Caution: Do not buy perishable foods when loss from wastage may occur. Plan the buying and cooking so that no perishables are left over to spoil.

5. Buy foods in season.
6. Do not buy foods at exorbitant prices if such prices are due to any of the following:
 - Food which is in season but a short time, such as venison
 - Limited supply
 - Fads and fashions
 - Choice flavors
7. Do not pay for advertising; for example, do not spend money for prepared foods which by shrewd advertising are made to cost several times as much as the raw foods in bulk.
8. Do not pay for "excess" refuse; that is, do not buy foods which contain large amounts of more or less useless substances, such as bones, or the skins, seeds, and tough stems and leaves of vegetables.
9. Plan the meals ahead, so as to buy to advantage.
10. In purchasing, consider both cost and nutriment.
11. Store dry foods, such as cereals and vegetables, so that they will not spoil.

X. Economy in serving:

1. Do not buy or cook more for a meal than the family will eat, unless planning on left-overs.
2. Do not prepare unpalatable dishes that no one will eat; one of the greatest sources of waste is the failure to make what is served attractive and palatable.
3. Do not burn or otherwise waste foods by careless cooking; note that much meat is injured by overcooking.
4. Serve fewer courses and fewer dishes at a meal.
5. Do not serve on a plate more food than can be eaten; follow the practice of the "clean plate."

XI. Economy in eating:

1. Learn to eat all kinds of food.
2. Do not eat more food than can be properly utilized by the body; eat less and chew more. Do not eat between meals.
3. Where they are relished, eat the skins of fish, meat, baked potatoes, fruits, etc.

XII. Economy in refuse:

Use refuse from foods wherever possible; for example:

1. Throw away less food as garbage.
2. Keep chickens and let them feed on waste food.
3. Sell bones to fertilizer concerns.
4. Convert fat which cannot be used in cooking into soap for rough cleaning at home, or sell the fat to soap-makers. See XV, page 179.
5. Use fruit parings, cores, and pits in making jelly, marmalade, or vinegar.
6. Use rinds of oranges and of other citrous fruits for various purposes; for example:
 - a. In making extracts, use only the oily or colored part of rind. (See recipes, page 173.)
 - b. In making jelly, use the white part of rind as a source of pectin.
 - c. In making marmalade, use part or all of the rind as a source of pectin and bulk.
 - d. In preparing candied peel, either whole or as "straws" (a candy), as a rule use the entire rind—the colored and white portion.
7. Collect tin foil from yeast, candies, etc., and sell it by the pound.

XIII. Economy in gas: -

1. Use a fireless cooker as far as possible.
2. If the utensil is at hand, use a high-pressure cooker.
3. Be careful of gas; note that gas is wasted in the following ways:
 - a. In burning the gas when it is not in use.
 - b. In keeping the flame high after a liquid boils.
 - c. In using a large burner for a small utensil.
 - d. In not adjusting the burner. (Have the gas-mixer adjusted so that there is no loss from unburned gas.)
 - e. In not covering the cooking utensil.
 - f. In using a large oven, instead of a small one, for baking a small quantity. (The large oven should be used with large quantities only; several recipes can often be cooked at one time.)
4. Learn to read the gas, electric, and water meters. By so doing, the housekeeper often saves money in paying bills.

XIV. Economy in utensils:

1. Buy firm utensils that will wear well.
2. Buy utensils which are (a) time-savers, (b) labor-savers; many utensils, such as those that clean easily or promote "short-cuts" in cooking, are both time- and labor-savers.

XV. Economy in soap for the kitchen and laundry:

1. Avoid cheap soaps for the following reasons:
 - a. Cheap soaps often contain excess water.
 - b. Cheap soaps are usually the most expensive, as the free alkali which they contain will destroy fabrics washed with them.
2. Buy soap in large quantities; expose well to the air, and store in a dry place, such as the attic. Soap lasts longer if it is dry, because it does not dissolve so readily.
3. Since hard water wastes soap to a great extent, soften hard water by use of various softening agents. Few persons are able to secure natural soft water.
4. Make left-over pieces of soap into a solution, and use for dish-washing, etc.
5. Make soap at home from left-over grease, such as fat skimmed from stock. Is this always an economy?

XVI. Ways of earning money at home:

1. Pick fruit, etc., on shares.
2. Produce the following at home, then sell:
 - Fresh vegetables, fruits, and flowers, grown in gardens, hot-beds, or window-boxes
 - Canned foods, jellies, etc. (study home outfits for commercial canning, such as those used by canning clubs throughout the country)
 - Butter, chickens, and eggs
 - Etc.

PART C. MARKETING TABLES AND GUIDES

INTRODUCTORY NOTES

The trained housekeeper soon will begin to consider which foods are cheapest as a source of energy and which are cheapest as a source of building material, for example, protein, lime, or iron.

Student is to supply data (prices, etc.) for the various tables and guides. Deal, as far as practical, with normal prices; specify whenever war or other abnormal prices are quoted.

Prices of meats and other foods vary according to season, locality, supply and demand.

The photographs of retail cuts of beef, following pages 180, 186, and 190, are taken from *Bulletin 158* and *Circular 206*, University of Illinois.

All meat tables, photographs, and diagrams, including the work taken from the University of Illinois publications, deal primarily with Chicago cuts.

The tables and photographs from *Bulletin 158*, University of Illinois, deal with the cuts from prime steer carcasses—that is, cuts much fatter than the usual cuts. The photographs from *Circular 206*, University of Illinois, are typical of the usual retail cuts secured in the majority of local retail shops.

The photographs reproduced from *Bulletin 158*, University of Illinois, are designated in accordance with the numbering used in the diagram on page 181.

PROTEIN FOODS

EXPLANATORY NOTES ON RETAIL CUTS OF BEEF

1. The T-bone is typical of porterhouse steaks; club steaks, as well as the last regular porterhouse steak, are partial exceptions in that the bones in them are not true T-bones.

Club steaks are generally considered to be the last three steaks from the porterhouse cut. They contain very little or no tenderloin. The true club steak is the last cut. Sometimes the tenderloin is removed from the loin, and then all the porterhouse steaks are classed by some as club steaks.

A short-cut steak has the strip-end (flank-end or tail) of the steak cut off; it is prepared from a club or any other porterhouse steak, and sells at a higher price than either. A short-cut steak is often called "short" steak or "short-porterhouse" steak. The strip-end of a porterhouse steak is inferior in quality.

When tenderloin or fillet is removed, steaks from the loin are called "strip steaks."

2. Prime ribs are sometimes used as steaks; they involve very little waste in serving.

3. Round steaks: The "inside" or "top of the round," which is the more tender part of the steak, can easily be distinguished from the "outside" or "bottom of the round," since it is made up of but one large muscle while the latter consists of two muscles.



FIG. 1.—ELEVENTH AND TWELFTH RIB ROAST
Rib cut No. 1



FIG. 2.—NINTH AND TENTH RIB ROAST
Rib cut No. 2

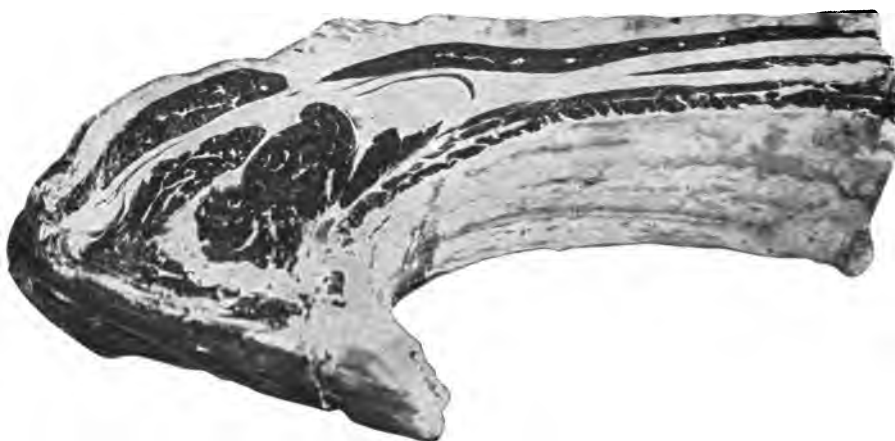


FIG. 3.—SEVENTH AND EIGHTH RIB ROAST
Rib cut No. 3

(Figs. 1-3 from *Bulletin 138*, University of Illinois)



FIG. 4.—SIXTH RIB ROAST
Rib cut No. 4

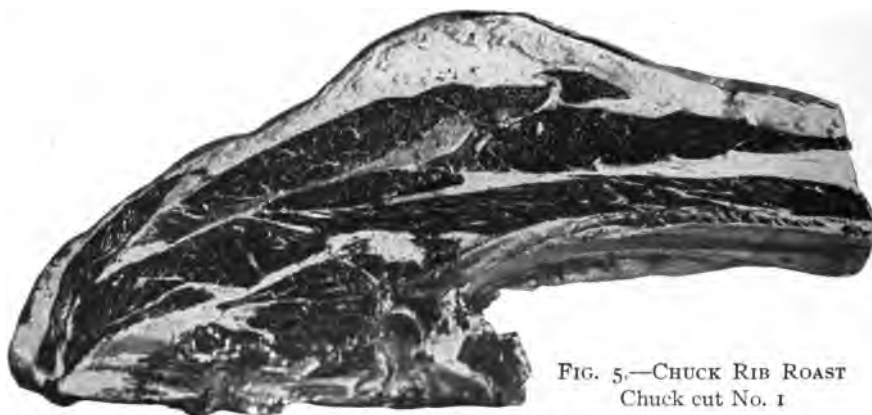


FIG. 5.—CHUCK RIB ROAST
Chuck cut No. 1

(Figs. 4 and 5 from *Bulletin 158*, University of Illinois)



FIG. 6.—RUMP ROAST
Cut surface adjoining the loin. A, hip bone
(From *Circular 206*, University of Illinois)

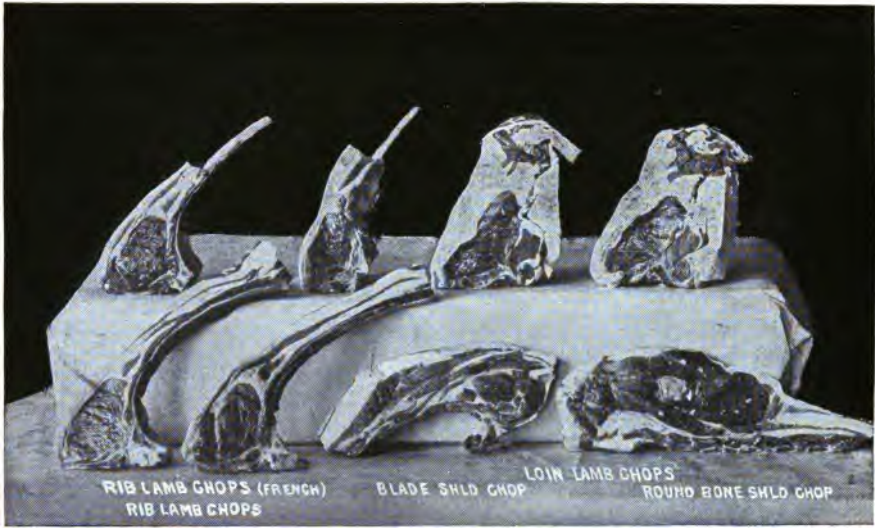


FIG. 7

(By permission of Teachers College, Columbia University)



FIG. 8.—PORTERHOUSE STEAK

Showing the typical T-bone
A, tenderloin muscle; B, strip end

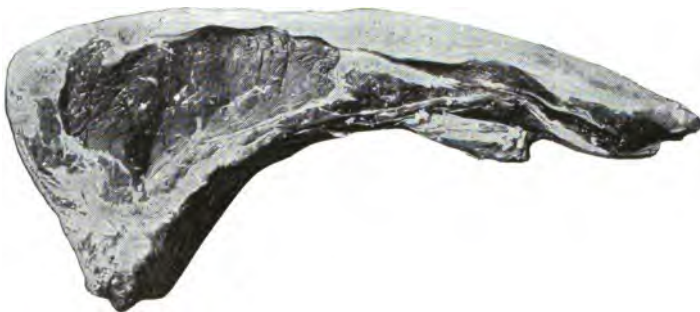


FIG. 9.—CLUB STEAK

Last cut nearest the rib. No tenderloin
(Figs. 8 and 9 from *Circular 206*, University of Illinois)



FIG. 10.—SIRLOIN STEAK
One of the first cuts
A, hip bone; B, backbone; C, tenderloin muscle

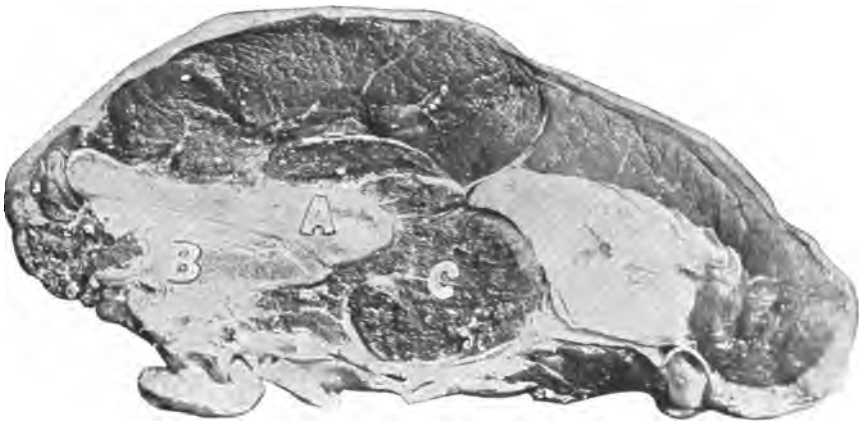
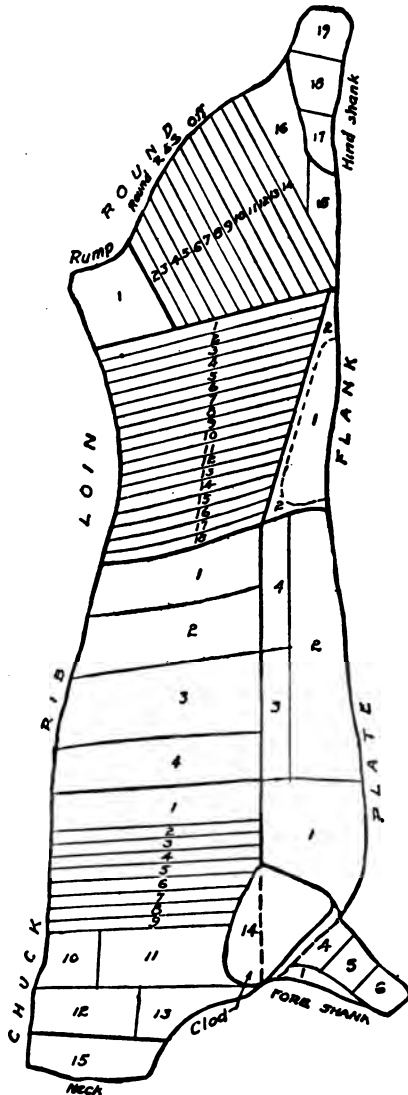


FIG. 11.—SIRLOIN STEAK
Cut from near the porterhouse
A, hip bone; B, backbone; C, tenderloin muscle
(Figs. 10 and 11 from *Circular 206*, University of Illinois)

4. The skirt steak is the muscular part of the lower section of the diaphragm.

5. The hanging tenderloin is a piece of lean beef (1 lb. average weight) which comes from the upper muscular section of the diaphragm. One end of this "tenderloin" is attached to the backbone and lies in front of the kidneys. It is excellent for stews, or, if split, may be used as steak. Price per pound?

RETAIL CUTS OF BEEF¹



HIND QUARTER

ROUND:

Rump:

1. Rump

Round: rump and shank off

2. Round steak, first cut
- 3-13. Round steaks
14. Round steak, last cut
15. Knuckle soup bone
16. Pot roast

Hind shank:

- 17, 18. Soup bones
19. Hock soup bone

LOIN:

1. Butt-end sirloin steak
2. Wedge-bone sirloin steak
- 3, 4. Round-bone sirloin steak
- 5, 6. Double-bone sirloin steak
7. Hip-bone sirloin steak
8. Hip-bone porterhouse steak
- 9-15. Regular porterhouse steak
- 16-18. Club steaks

FLANK:

1. Flank steak
2. Stew

FORE QUARTER

RIB:

1. 11th and 12th rib roast
2. 9th and 10th rib roast
3. 7th and 8th rib roast
4. 6th rib roast

CHUCK:

1. 5th rib roast
- 2-9. Chuck steaks
- 10-13. Pot roasts
14. Clod
15. Neck

PLATE:

1. Brisket
2. Navel
- 3, 4. Rib ends

FORE SHANK:

1. Stew
2. Knuckle soup bone
- 3-6. Soup bones

¹ Taken from *Bulletin 158*, University of Illinois, by L. D. Hall and A. D. Emmett.

RETAIL CUTS OF BEEF: METHOD OF COOKING, PRICE, AND QUALITY

*Date of prices given:**Location of market:*

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
BROILED MEATS (STEAKS)			
Round, 13 steaks.....			
Rump.....			
Loin, 18 steaks:			
a. Sirloin, 7 steaks including pin-bone steaks.....			
b. Porterhouse (see Note 1, p. 180), 1 hip- bone and 7 regular or prime steaks....			
c. Club, 3 steaks.....			
d. Tenderloin (fillet).....			
Rib—prime (see Note 2, p. 180).....			
Flank (score crosswise in order to make tender), 1 steak only.....			
Chuck, 9 steaks (first to ninth cut), first cut generally used for oven-roasting....			
Clod (score crosswise).....			
Hamburg.....			
SAUTÉED MEATS			
Brains.....			
Kidney.....			
Liver.....			
Tripe (breaded).....			
Sweetbreads.....			
FRIED MEATS			
Brains.....			
Liver.....			
Tripe.....			
Sweetbreads.....			

RETAIL CUTS OF BEEF—Continued

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
OVEN ROASTS			
Round.....			
Rump.....			
Tenderloin (fillet).....			
Loin (used more often for steaks than for roasts).....			
Rib, prime rib roasts:			
<i>a.</i> 1st cut, or 11th and 12th ribs.....			
<i>b.</i> 2d cut, or 9th and 10th ribs.....			
<i>c.</i> 3d cut, or 7th and 8th ribs.....			
<i>d.</i> 4th cut, or 6th rib.....			
Chuck, 1-rib roast, 5th rib (sometimes 4th rib is also used).....			
Rib ends (short ribs).....			
Clod.....			
Skirt steak (stuffed and rolled).....			
Heart.....			
BOILED MEATS			
Shank.....			
Round.....			
Loin (part left after removing tenderloin).....			
Flank (2d cut).....			
Chuck.....			
Plate (rib ends).....			
Brisket.....			
Clod.....			
Neck.....			
Heart.....			
Sweetbreads.....			
Tongue.....			
Kidney.....			

RETAIL CUTS OF BEEF—*Continued*

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
BRAISED MEATS (Pot-roast and oven-braised meats, etc.)			
Round.....			
Rump.....			
Flank (2d cut).....			
Chuck (shoulder).....			
Short ribs.....			
Brisket.....			
Clod.....			
Skirt steak (see Note 4, p. 181).....			
Liver.....			
Tail.....			
STEWES AND CASSEROLES			
Round, knuckle.....			
Rump:			
a. 1st cut.....			
b. 2d cut.....			
Flank, 2d cut.....			
Chuck.....			
Clod.....			
Plate.....			
Brisket.....			
Neck.....			
Shin.....			
Skirt steak.....			
Kidney.....			
Tripe:			
a. Honeycomb.....			
b. Plain.....			
Tongue.....			

RETAIL CUTS OF BEEF—Continued

CUTS GROUPEL ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
SOUP MEATS			
Tail.....			
Round (knuckle).....			
Plate.....			
Brisket.....			
Neck.....			
Fore and hind shank.....			
CHOPPED-MEAT DISHES (Hamburg steak, mince meat, beef loaf, beef tea, frankfurters, etc.)			
Neck.....			
Round steak.....			
Top of sirloin.....			
Ends trimmed from porterhouse and other steaks.....			
CORNE D MEATS			
Round.....			
Rump.....			
Chuck.....			
Plate (navel).....			
Brisket.....			
Neck.....			
Tongue.....			
PICKLED MEAT			
Tripe.....			
DRIED MEAT			
Round.....			
SUET			
Kidney fat.....			

**COST OF LEAN AND OF TOTAL MEAT IN THE VARIOUS RETAIL CUTS
AT MARKET PRICES***

RETAIL CUTS	DIAGRAM NUMBER (FIG. ON PAGE 181)	RETAIL PRICE PER LB. OF CUT, CENTS	COST PER LB. OF LEAN MEAT IN CUT, CENTS	COST PER LB. OF LEAN AND FAT MEAT IN CUT, CENTS
STEAKS				
Porterhouse, hip-bone.....	8	25	38.6	28.9
Porterhouse, regular.....	10	25	40.2	27.2
Club steak.....	18	20	32.1	22.6
Sirloin, butt-end.....	1	20	25.3	20.6
Sirloin, round-bone.....	3	20	28.3	21.1
Sirloin, double-bone.....	5	20	28.7	22.7
Sirloin, hip-bone.....	7	20	32.3	24.2
Flank steak.....	1	16	19.3	16.0
Round, first cut.....	2	15	17.0	15.3
Round, middle cut.....	6	15	17.3	15.6
Round, last cut.....	14	15	19.3	16.0
Chuck, first cut.....	2	12	18.3	14.1
Chuck, last cut.....	9	12	15.7	13.1
ROASTS				
Prime ribs, first cut.....	1	20	40.5	22.9
Prime ribs, last cut.....	4	16	26.1	18.8
Chuck, 5th rib.....	1	15	22.8	17.3
Rump.....	1	12	19.4	12.8
BOILING AND STEWING PIECES				
Round pot roast.....	16	10	11.6	10.1
Shoulder clod.....	14	10	12.3	10.5
Shoulder pot roast.....	11	10	14.3	11.6
Rib ends.....	3	8	16.2	9.2
Brisket.....	1	8	15.0	8.7
Navel.....	2	7	12.8	7.7
Flank stew.....	2	7	10.9	7.1
Fore shank stew.....	1	7	8.5	7.0
Neck.....	15	6	8.5	7.0
SOUP BONES				
Round, knuckle.....	2	5	26.3	12.5
Hind shank, middle cut.....	18	5	7.5	6.3
Hind shank, hock.....	19	5	62.5	26.6
Fore shank, knuckle.....	2	5	17.2	12.5
Fore shank, middle cut.....	4	5	12.5	9.4
Fore shank, end.....	6	5	28.8	20.9

*This table and comment are taken from *Bulletin 158*, University of Illinois, July, 1912, pp. 171-172, by L. D. Hall and A. D. Emmett.

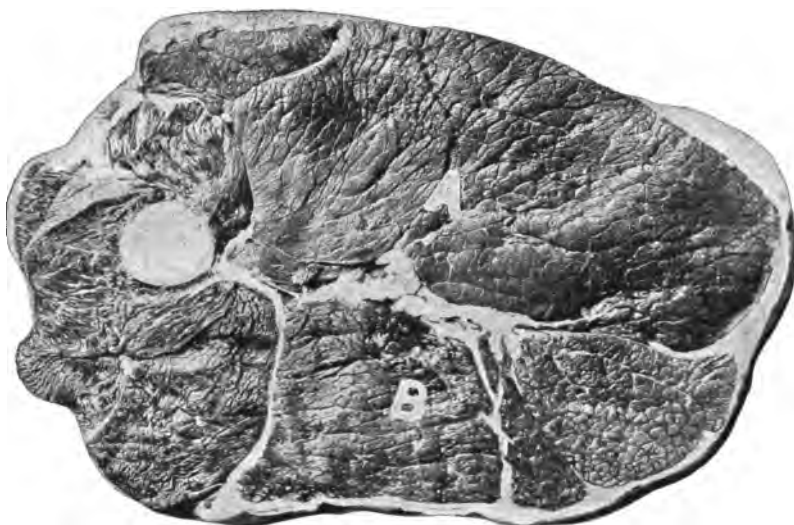


FIG. 12.—ROUND STEAK
 Typical steak from center of the round: A, "inside"; B, "outside"



FIG. 13.—ROUND STEAK
 From lower part of round. Inferior to steak shown in Fig. 12
 (Figs. 12 and 13 from *Circular 206*, University of Illinois)



FIG. 14.—FLANK STEAK
 Flank cut No. 2
 (From *Bulletin 158*, University of Illinois)



FIG. 15.—CHUCK STEAK
 A, shoulder blade; B, rib and backbone
 (From *Circular 206*, University of Illinois)

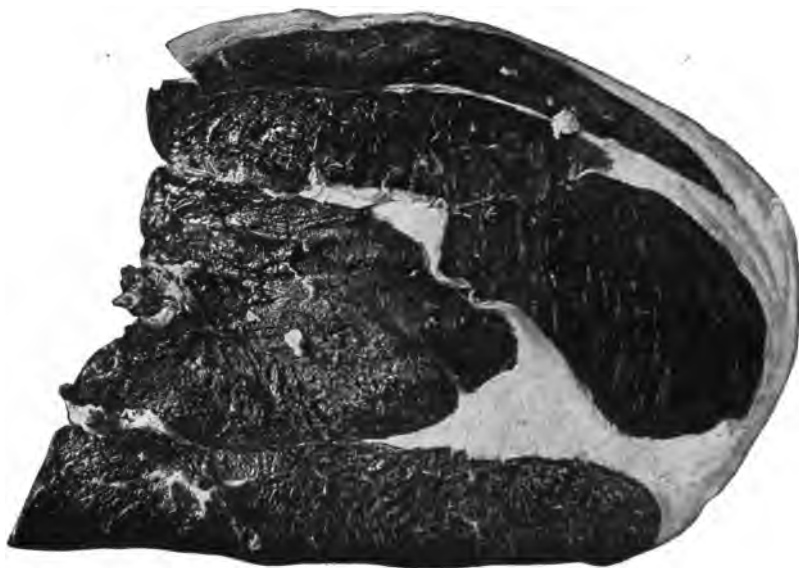


FIG. 16.—ROUND POT ROAST
Round cut No. 16
(From *Bulletin 158*, University of Illinois)



FIG. 17.—SHOULDER POT ROAST
A, shoulder blade; B, backbone
(From *Circular 206*, University of Illinois)



FIG. 18.—FLANK STEW
Flank cut No. 1



FIG. 19.—CHUCK STEW
Chuck cut No. 13



FIG. 20.—SHANK STEW
Fore shank cut No. 1

(Figs. 18-20 from *Bulletin 153*, University of Illinois)

The following comment applies to the table on page 186:

"Taking the net cost of the lean meat as a basis of comparison, we learn from these data that the most expensive steaks at the prices given are the porterhouse cuts, followed by the club, sirloin, flank, round, and chuck steaks. Of the different roasts, the first-cut prime ribs are the most costly in terms of lean meat, and the rump roast is the most economical. The various boiling and stewing pieces furnish lean meat more economically at market prices than either the roasts or steaks, the rib ends and brisket being the dearer cuts of this class, while the neck and shank stews are relatively cheapest. Several of the soup bones are very economical sources of lean meat, particularly the middle cuts of both shanks; and only one of them is extremely expensive, even on this basis. In general, the wide variation between the various cuts in net cost of lean is remarkable, ranging from 7.5 cents in one of the soup bones to 40.5 cents in a prime rib roast, and up to 62.5 cents in the hock soup bone; the latter, however, being used primarily for its flavoring substance rather than for lean meat. . . . It is evident, therefore, that retail prices of beef cuts are determined chiefly by considerations other than their food value, such as tenderness, grain, color, general appearance, and convenience of cooking."

COST OF MEAT REQUIRED TO FURNISH ONE POUND OF PROTEIN AND 1,000 CALORIES FROM WHOLESALE CUTS AT MARKET PRICES*

WHOLESALE CUTS	RETAIL PRICE PER LB., CENTS	BONELESS MEAT IN THE CUT, PER CENT	COST OF LB. BONELESS MEAT IN CUT, CENTS	COST OF LB. PROTEIN IN CUT, CENTS	COST OF 1,000 CALORIES IN CUT, CENTS
Fore shank.....	5	59.56	8.4	50	7
Hind shank.....	5	48.84	10.2	63	9
Neck.....	6	84.31	7.1	46	5
Flank.....	8	99.44	8.0	85	3
Plate.....	8	91.23	8.7	82	4
Clod.....	10	95.18	10.5	63	10
Chuck.....	11	87.99	12.5	84	9
Rump.....	12	79.85	15.0	119	8
Round.....	15	90.39	16.6	101	15
Rib.....	18	85.56	21.0	171	11
Loin.....	22	90.23	24.4	188	14

*Taken from *Bulletin 158*, University of Illinois, (July, 1912), "Relative Economy, Composition, and Nutritive Value of the Various Cuts of Beef," by L. D. Hall and A. D. Emmett. Average prices calculated from the retail prices given in table on page 186.

Note:

Observe points *a* and *b* in regard to the two preceding tables:

- The retail prices quoted in these tables are based on those for prime steers, and are at the present time out of date.
- Pupil to make two corresponding tables, preserving the same proportions and otherwise using the given tables as models. (Secure current retail prices of meats in the local market, place them in the second and first columns respectively of the two tables, and then calculate data for the remaining columns.)

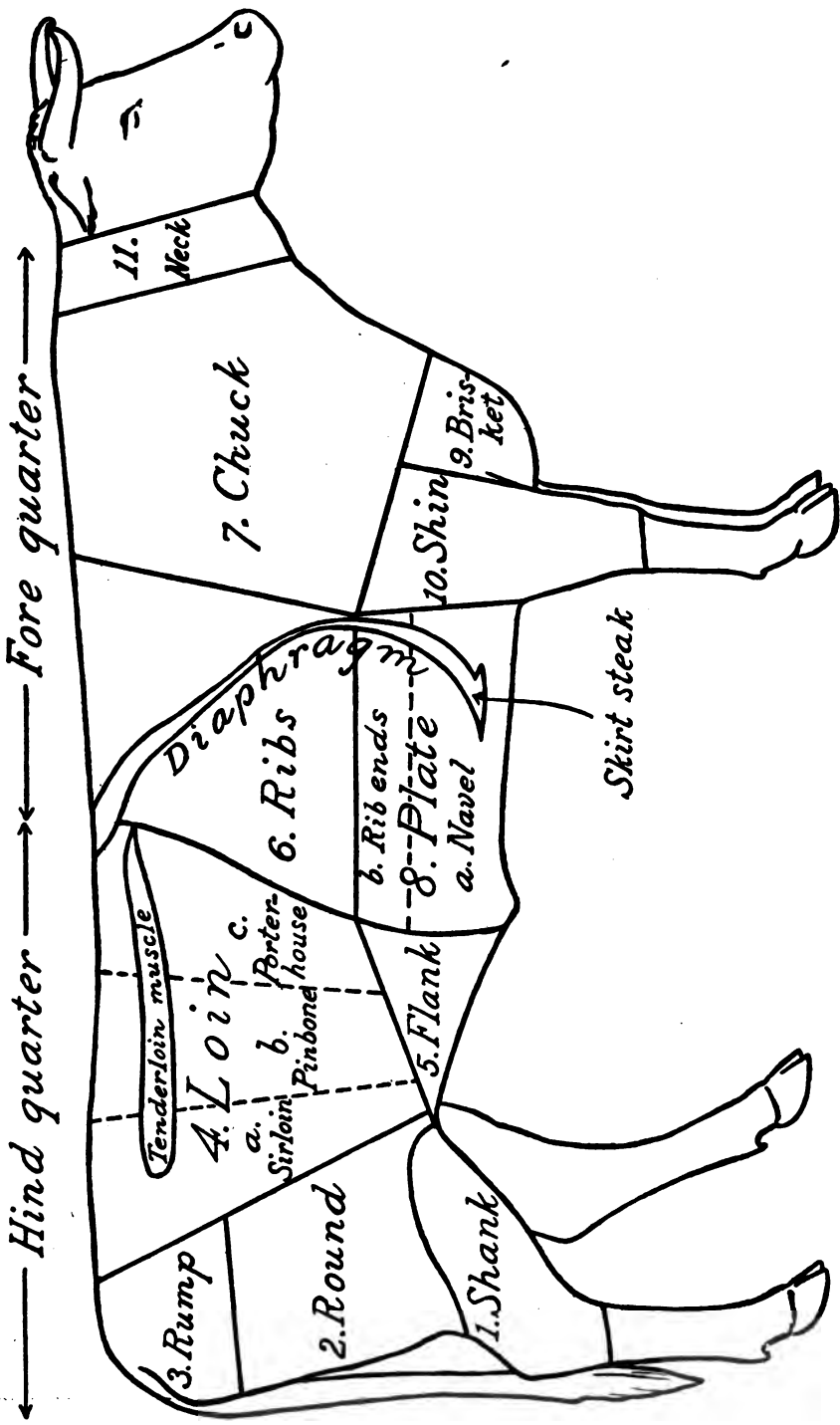
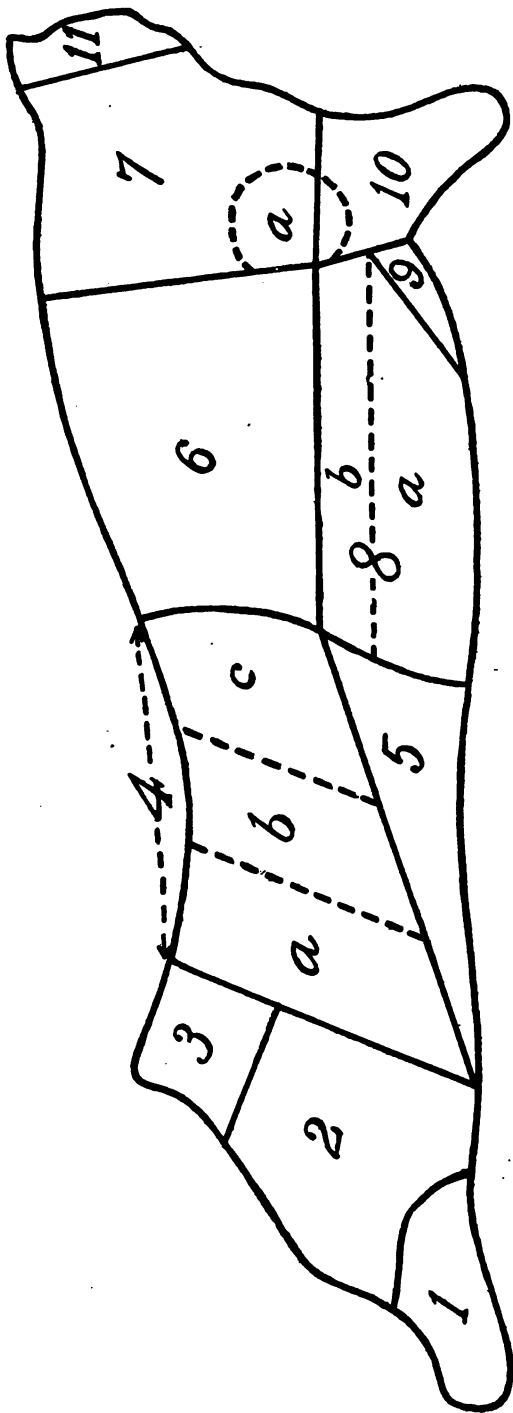


FIG. 21.—BEEF ON HOOF (wholesale cuts)



LIST OF CUTS

(To be largely supplied by the pupil. See diagram of beef on hoof)

- | | |
|---------------------------------------|--|
| A. Hind quarter | |
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| a. | |
| b. | |
| c. Porterhouse, including club steaks | |
| 5. | |
| a. Steak | |
| b. Stew | |
| B. Fore quarter | |
| 6. Ribs (prime) | |
| 7. | |
| a. Clod | |
| b. Shoulder and ribs | |
| 8. | |
| a. Navel | |
| b. Rib ends or short ribs | |
| 9. | |
| 10. | |
| 11. | |

FIG. 22. —HALF CARCASS OF BEEF AS HUNG (wholesale cuts)

WHOLESALE CUTS OF BEEF AND USES OF THEIR RETAIL CUTS

WHOLESALE CUTS	GENERAL CLASSES OF RETAIL CUTS AND THEIR USES
<p>HIND QUARTER</p> <p>1. Shank (hind).....</p> <p>2. Round.....</p> <p>3. Rump.....</p> <p>4. Loin.....</p> <p>5. Flank.....</p>	
<p>FORE QUARTER</p> <p>6. Ribs.....</p> <p>7. Chuck.....</p> <p>8. Plate.....</p> <p>9. Brisket.....</p> <p>10. Shin or shank (fore).....</p> <p>11. Neck.....</p>	

Notes:

1. The cuts may vary somewhat in different cities and with different firms.
2. Differentiate between prime and secondary cuts by placing an asterisk at the left of the name of each cut that is made up in whole or in part of prime cuts.
3. The tenderloin is a slightly used muscle which extends under the backbone from the hip joint to the last rib. It is thickest near the forward end of the hip bone.



FIG. 23.—“HEEL OF THE ROUND”
Cut surface adjoining last round steak
(From *Circular 206*, University of Illinois)

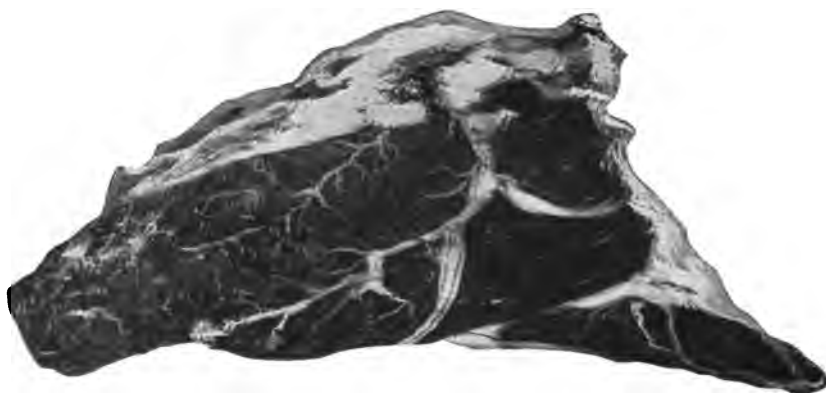


FIG. 24.—SHOULDER CLOD
Chuck cut No. 14
(From *Bulletin 158*, University of Illinois)



FIG. 25.—PLATE BOIL
A, rib end; B, breastbone



FIG. 26.—PLATE BOIL
Boned and rolled

(Figs. 25 and 26 from *Circular 206*, University of Illinois)

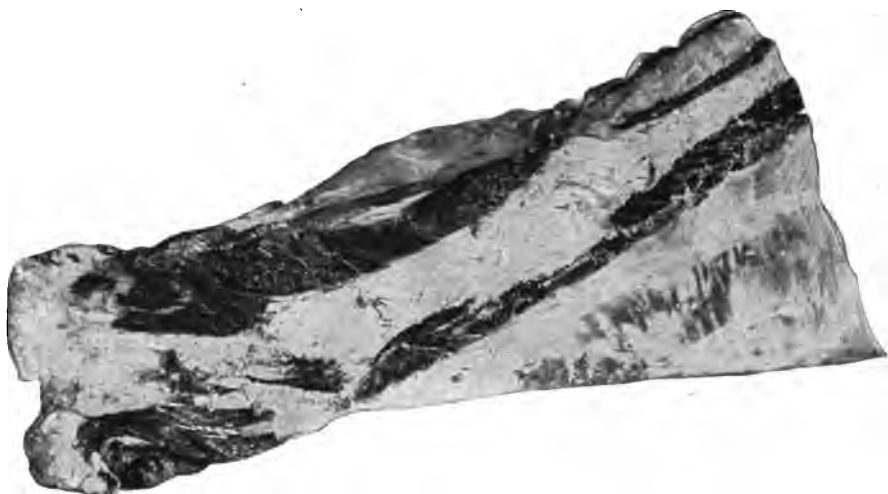


FIG. 27.—BRISKET
Plate cut No. 1



FIG. 28.—NAVEL
Plate cut No. 2



FIG. 29.—RIB ENDS
Plate cut No. 4

(Figs. 27-29 from *Bulletin 158*, University of Illinois)



FIG. 30.—NECK
Chuck cut No. 15

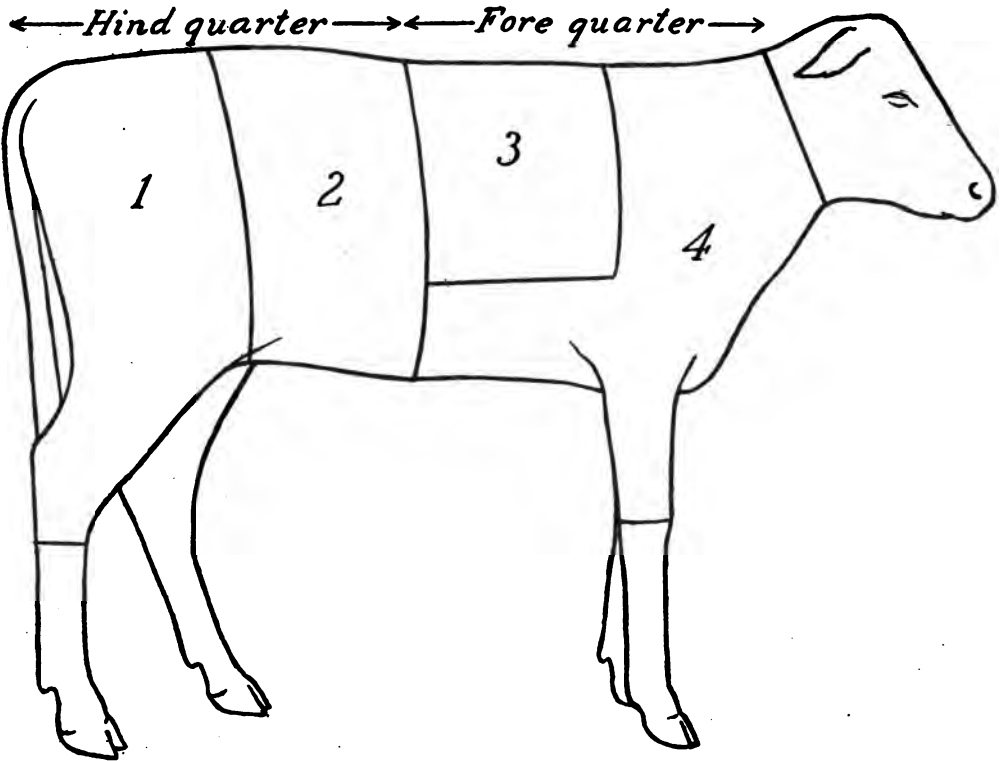


FIG. 31.—HIND SHANK SOUP BONE
Round cuts Nos. 17, 18, 19



FIG. 32.—KNUCKLE SOUP BONES
Fore shank cuts Nos. 2, 3

(Figs. 30-32 from *Bulletin 158*, University of Illinois)



LIST OF CUTS

(To be supplied by the pupil. See diagram of half carcass of veal as hung)

Hind quarter

1.....

2.....

Fore quarter

3.....

4.....

FIG. 33.—VEAL ON HOOF (wholesale cuts)

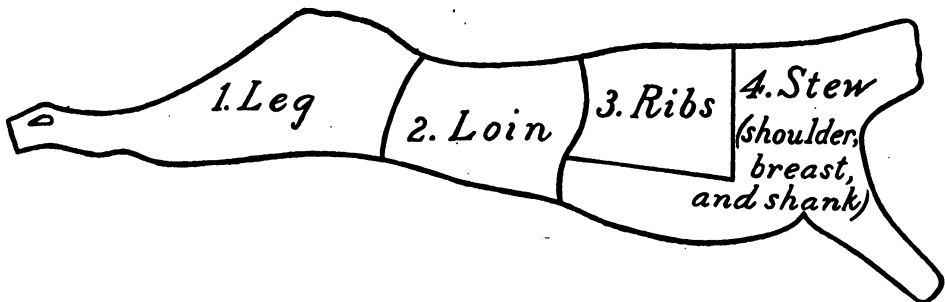


FIG. 34.—HALF CARCASS OF VEAL AS HUNG (wholesale cuts)

RETAIL CUTS OF VEAL: METHOD OF COOKING, PRICE, AND QUALITY*Date of prices given:**Location of market:*

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
BROILED MEATS			
Chops.....			
Steaks or cutlets.....			
Kidney.....			
Sweetbreads.....			
SAUTÉED MEATS			
Loin.....			
Sweetbreads.....			
Brains.....			
Liver.....			
FRIED MEATS			
Sweetbreads.....			
Heart.....			
Brains.....			
OVEN ROASTS			
Leg, shoulder.....			
Loin.....			
Heart.....			
BOILED MEATS			
Neck.....			
Shank and shin.....			
Breast.....			
Tongue.....			
BRAISED MEATS			
Shoulder.....			
Breast.....			
Kidney.....			
Sweetbreads.....			

RETAIL CUTS OF VEAL—Continued

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
STEWES AND CASSEROLES			
Neck.....			
Shin.....			
Breast.....			
Shoulder.....			
SOUP MEATS			
Shank and shin.....			
Neck.....			
CHOPPED-MEAT DISHES			
Knuckle (hind shank).....			
Lean meat, trimmings.....			
Neck.....			
Flank.....			
Plate.....			

Note:

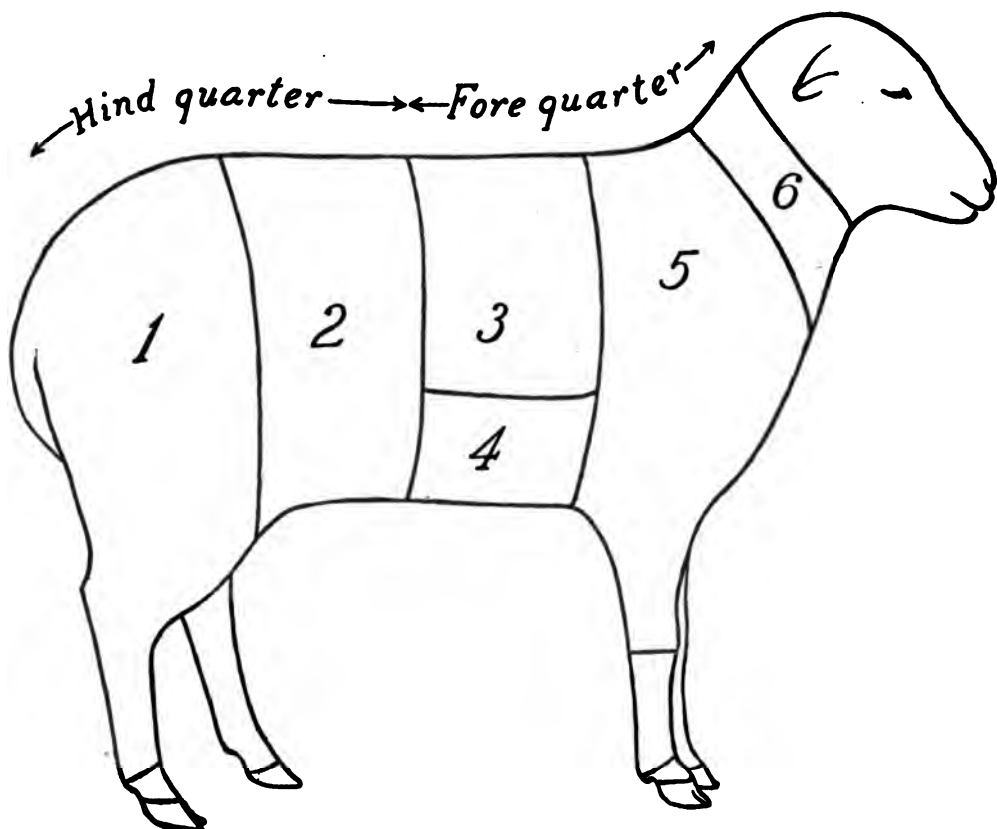
Veal is obtained from a "beef" animal 6-10 weeks old; it is best at 8 weeks of age. "Bob veal," veal under 6 weeks of age, is now known to be not poisonous, but healthful food. It is not economical, however, as the percentage of water is very high.

WHOLESALE CUTS OF VEAL AND USES OF THEIR RETAIL CUTS

WHOLESALE CUTS	GENERAL CLASSES OF RETAIL CUTS AND THEIR USES
HIND QUARTER	
1. Leg.....	
2. Loin.....	
FORE QUARTER	
3. Ribs.....	
4. Stew (shoulder, breast, and shank)....	

Notes:

1. The cuts may vary somewhat in different cities and with different firms.
2. Differentiate prime from secondary cuts by the use of an asterisk.



LIST OF CUTS

(To be supplied by the pupil. See diagram of half carcass of mutton as hung)

Hind quarter

1.....

2.....

Fore quarter

3.....

4.....

5.....

6.....

NOTE. The cuts for the lamb are identically the same as for the mutton.

FIG. 35.—MUTTON ON HOOF (wholesale cuts)

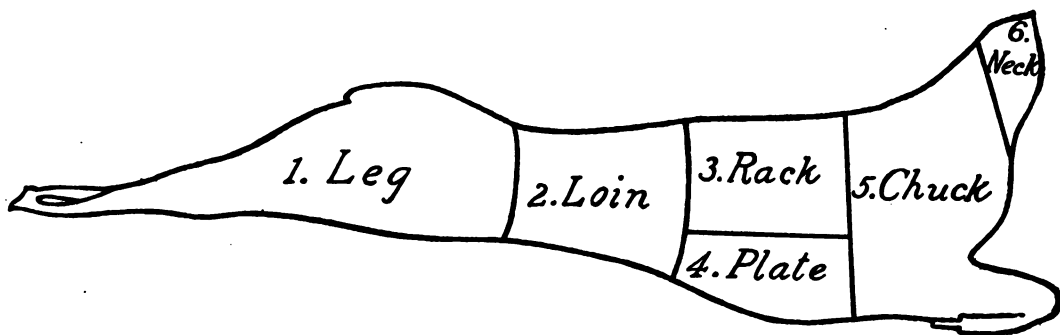


FIG. 36.—HALF CARCASS OF MUTTON AS HUNG (wholesale cuts)

RETAIL CUTS OF MUTTON: METHOD OF COOKING, PRICE, AND QUALITY*Date of prices given:**Location of market:*

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
BROILED MEATS (Chop cuts)			
Leg			
Loin			
Short rack or ribs (10 ribs)			
Chuck (shoulder)			
SAUTÉED MEATS			
Brains			
Kidney			
OVEN ROASTS			
Leg			
Loin			
Short rack or ribs (10 ribs), crown roast			
Chuck (shoulder)			
Plate or breast			
Heart (stuff before roasting)			
BOILED MEATS			
Tongue			
Kidney			
STEWES AND CASSEROLES			
Chuck (stew)			
Plate or breast (stew)			
Neck (stew)			
Brains (casserole)			
Kidney (stew or casserole)			

Notes:

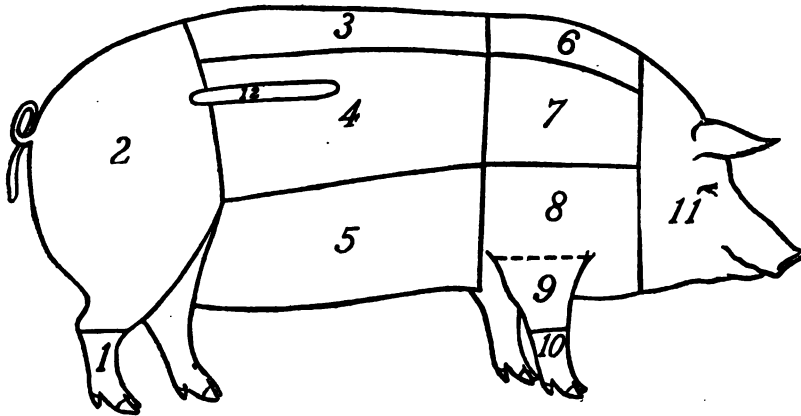
1. The data in the preceding table apply to lamb as well as to mutton. Lamb is the animal from 6 weeks up to almost 1 year of age; it is best at about 8 weeks, with weight of 40-45 lb. An animal over 1 year old is called mutton.
2. In general, how do prices of mutton compare with those of lamb?
3. The "racks" of lamb or mutton include the fore quarters of the carcass, cut between the twelfth and thirteenth ribs, while the short racks are only the ribs.
4. The roast termed "crown of lamb or mutton" consists of rib (short rack) chops brought together on end in such a way as to form a circlet or crown.
5. By "saddle" of lamb or mutton is meant the combined leg and loin cuts of the carcass.

WHOLESALE CUTS OF MUTTON AND USES OF THEIR RETAIL CUTS

WHOLESALE CUTS	GENERAL CLASSES OF RETAIL CUTS AND THEIR USES
HIND QUARTER	
1. Leg.....
2. Loin.....
FORE QUARTER	
3. Short-rack or ribs.....
4. Plate or breast.....
5. Chuck or shoulder.....
6. Neck.....

Notes:

1. The cuts may vary somewhat in different cities and with different firms.
2. Differentiate prime from secondary cuts by placing an asterisk at the left of the name of each cut that is made up in whole or in part of prime cuts.
3. The cuts of lamb and their uses are identical with those of mutton, as given in this table, except that very young lamb is sold by the quarter.



LIST OF CUTS

(To be largely supplied by the pupil. See diagram of half carcass of pork as hung)

- | | |
|---------------|----------------------------|
| 1. | 6. |
| 2. | 7. |
| 3. | 8. |
| 4. | 9. |
| 5. | 10. |
| a. Bacon | 11. |
| b. Spare ribs | 12. Tenderloin muscle..... |

FIG. 37.—PORK ON HOOF (wholesale cuts)

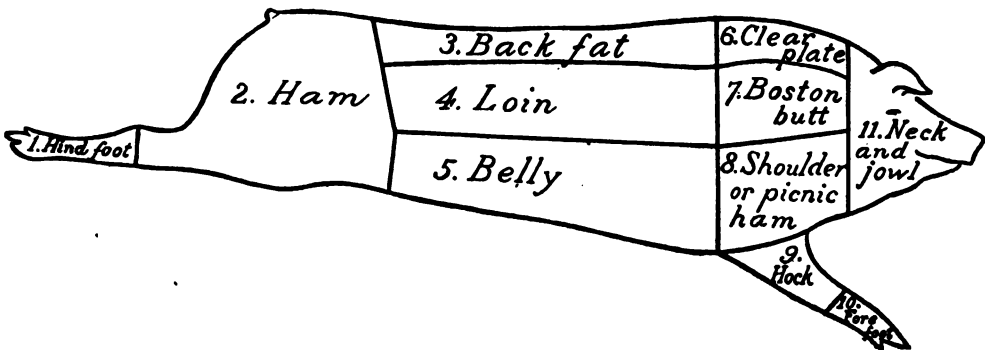


FIG. 38.—HALF CARCASS OF PORK AS HUNG (wholesale cuts)

RETAIL CUTS OF PORK: METHOD OF COOKING, PRICE, AND QUALITY*Date of prices given:**Location of market:*

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
BROILED MEATS			
Loin:			
a. Chops.....			
b. Tenderloin.....			
Boston butt (steaks).....			
Bacon.....			
Salt pork.....			
Shoulder or picnic ham (steaks).....			
Ham (short-cut), smoked.....			
Kidney.....			
SAUTEED MEATS			
Ham, short-cut			
Brains.....			
Kidney.....			
FRIED MEATS			
Hind foot.....			
Fore foot.....			
OVEN ROASTS			
Ham, short-cut			
Loin:			
a. Roast.....			
b. Tenderloin.....			
Boston butt.....			
Spare ribs (short ribs).....			
Shoulder or picnic ham.....			
Neck.....			
Heart (stuff before roasting).....			
BRAISED MEATS			
Neck.....			
BOILED MEATS			
Hind foot.....			
Fore foot.....			
Neck.....			
ngue.....			

RETAIL CUTS OF PORK—Continued

CUTS GROUPED ACCORDING TO METHOD OF COOKING	PRICE OF CUTS PER LB.	SAME CUTS LISTED IN SEQUENCE ACCORDING TO:	
		PRICE PER LB. (Highest value placed first)	DEGREE OF TENDERNESS OR QUALITY (Most tender cuts placed first)
STEWES			
Hind foot.....			
Hock or fore shank.....			
Fore foot.....			
Neck.....			
Kidney.....			
PICKLED MEATS			
Hind foot.....			
Back fat.....			
Boston butt.....			
Fore foot.....			
Tongue.....			
SALTED MEATS			
Boston butt.....			
Clear plate ("fat salt pork" results).....			
HEAD CHEESE			
Head, including jowl.....			
SMOKED MEATS			
Ham, short-cut.....			
Back fat.....			
Belly (bacon results):			
a. Ribs.....			
b. Brisket.....			
SAUSAGE			
Trimmings (special, lean, and regular).....			
LARD			
Kettle-rendered leaf.....			
Neutral.....			
Prime steam.....			
Compound.....			
.....			

Notes:

1. Lards differ according to the kind of fats used, their color, flavor, and grain, and the method employed in rendering.
2. Pork shoulder chops are often called "pork steaks" or "fresh ham."
3. Bacon is sold as follows:
 - a. Whole bacon
 - b. Sliced
 - c. "Ends" (used in sautéing other foods)
4. Ham (fresh or smoked) is sold as follows:
 - a. Whole ham (used for boiling and broiling)
 - b. Sliced (used for frying and broiling)
 - c. Sliced, cooked
 - d. Ends (used in boiling and sautéing other foods)

WHOLESALE CUTS OF PORK AND USES OF THEIR RETAIL CUTS

WHOLESALE CUTS	GENERAL CLASSES OF RETAIL CUTS AND THEIR USES
1. Hind foot.....
2. Ham (upper hind leg).....
3. Back fat.....
4. Loin.....
5. Belly.....
6. Clear plate.....
7. Boston butt.....
8. Shoulder or picnic ham (upper fore leg)
9. Hock.....
10. Fore foot.....
11. Neck and jowl

Notes:

1. The pork carcass is not divided into hind and fore quarters.
2. The cuts may vary somewhat in different cities and with different firms.
3. Differentiate prime from secondary cuts by placing an asterisk at the left of the name of each cut that is made up in whole or in part of prime cuts.

PRICES OF THE CHOPS OF FOUR CLASSES OF ANIMALS

Date of prices given:

CHOPS	RIB	LOIN	SHOULDER CHOP OR STEAK
Lamb	\$.....	\$.....	\$.....
Mutton	\$.....	\$.....	\$.....
Veal	\$.....	\$.....	\$.....
Pork	\$.....	\$.....	\$.....

Notes:

1. Is it true that the rib and loin chops of any *one* animal are about equal in price?
2. The rib and loin chops of any animal are prime cuts; shoulder chops are secondary cuts.
3. The combined ribs and loin of an animal are sometimes called the large loin, and the chops from this are termed large-loin chops.

EDIBLE PORTION AND WASTE IN CHOPS

Signify by the terms "much" and "little" the relative quantities of lean, fat, bone, etc., in the three kinds of chops.

EDIBLE PORTION AND WASTE	RIB CHOP	LOIN CHOP	SHOULDER CHOP
<i>Tender lean meat</i> , such as:			
"Eye" of rib chops (see Note 2)
Main section and tenderloin of loin chops
<i>Tough lean meat</i> , such as:			
Overhanging muscle of rib chops (see Note 2)
Strip, tail, or flank-end of loin chops
<i>Fat</i> , such as:			
Excess outside fat
Kidney fat of loin chops
<i>Bone</i> , such as:			
Rib
T-bone of loin chop
<i>Skin and membrane</i>

Notes:

1. Which are the most expensive chops with regard to edible portion? most economical?
2. The prime ribs of any animal (lamb, mutton, veal, or pork, as well as beef) are characterized by the size of the "eye"—in other words, the very choice meat; the inferior ribs have one or more overhanging muscles (usually tough), and the size of the "eye" is diminished. The choicer ribs contain very little overhanging muscle. (See photograph of chops, Fig. 7, following page 180.) The first six to eight rib chops are prime, the others secondary.
3. A rib chop differs from a prime beef rib roast in that the latter includes two or more ribs. A shoulder chop differs from a chuck rib roast in that the latter includes two or more shoulder chops.
4. Make diagrams of the following, and label the tender meat, tough meat, fat, etc.:
 - a. Prime rib chop and two inferior rib chops; show the varying amounts of overhanging muscle.
 - b. Loin chop, porterhouse steak, and sirloin steak. Compare the three.
 - c. Shoulder chops (blade and round-bone).
5. Fenching is often applied to prime rib chops (see cut), usually those of lamb or mutton. It is an extravagant but elegant method. Note directions:
 - a. Remove inside and outside membranes by pulling from thin end of the chop.
 - b. Trim off the meat and fat almost up to the "eye," or kernel of meat, scrape the bone very clean, then chop off bone to length desired.

After broiling Frenched chops, garnish the ends of bones with white paper tips.

As a rule, it is better to French the chops at home rather than to have it done at the market; all scraps of meat and bone removed may be saved in this way.

INTERNAL ORGANS OF VARIOUS ANIMALS

Secure many of the data from Hill, *Practical Cooking and Serving*; Farmer, *The Boston Cooking-School Cook Book*, and other authorities.

Note the comparative cheapness of most of the cuts.

Prices vary according to whether the cuts are from beef, veal, mutton, lamb, or pork.

INTERNAL ORGANS	ANIMALS FROM WHICH REMOVED	PRICE PER LB. OR PIECE	METHOD OF COOKING
Brains.....
Heart.....
Kidney.....
Liver.....
Paunch (sold as tripe).....
Pancreas (sold as sweetbreads).....
Thymus gland (sold as sweetbreads)...
Tongue (fresh or pickled).....

Note:

See Pattee, *Practical Dietetics with Reference to Diet in Disease*; Hutchison, *Food and the Principles of Dietetics*, etc., for a study of the food value and digestibility of these cuts.

ARRANGEMENT AND USES OF THE "CORRESPONDING" CUTS OF MEAT

By "corresponding" cuts are meant those cuts that are approximately in the same relative position in the carcass; for example, veal cutlets correspond in general to the steaks from the round of beef. It is to be borne in mind also that in the smaller animals one cut may include several of those in a larger animal; for instance, leg of veal corresponds to the rump, round, and hind shank of beef as regards location in the animal.

The cuts are much the same in all four of the animals, the tougher cuts being used for stews, etc.

[illegible][illegible]

POULTRY: RETAIL PRICE AND SEASONS

Use X as meaning "in season."

Date of prices given:

POULTRY	PRICE PER LB.	AVERAGE WEIGHT	IN SEASON ALL YEAR	JAN. FEB.	MAR. APRIL	MAY JUNE	JULY AUG.	SEPT. OCT.	NOV. DEC.
Chicken:									
a. Spring.....									
b. Hen (1 yr. or over).....									
c. Capon.....									
Duck.....									
Goose.....									
Guinea-hen.....									
Pigeon, tame.....									
Squab or young pigeon.....									
Turkey.....									

Notes:

1. Do not consider seasons with regard to cold-storage poultry, since, as a rule, cold-storage products of every type listed in the table can be obtained at all seasons.

2. Note the chief uses of chicken:

 Spring chicken: Fried and broiled

 Hen: Stewed, casserole, baked, or roasted

 Capon: Casserole, baked, or roasted

GAME: RETAIL PRICE AND SEASONS

Prepare a marketing table for game; study the game laws, and note that, as a rule, sportsmen are not allowed to sell their catch.

Determine which of the following are commercial products, then enter the names (rabbit, etc.) in a table similar to the one foregoing, in the first column considering price per pound or piece:

Ducks (such as canvas-
back)

Grouse

Partridge

Pheasant

Pigeon, wild

Plover

Quail

Rabbit

Reedbird

Ricebird

Snipe

Squab

Squirrel

Turkey, wild

Woodcock

Etc.

CLASSIFICATION OF VERTEBRATE FISH

Date of prices given:

FISH	PRICE	SOURCE	METHODS OF SERVING	DIGESTIBILITY
REPTILES OR NON-SCALY FISH				
Terrapins				
Turtles				
.....				
AMPHIBIANS				
Frogs.....				
.....				
FISH				
Eels.....				
Fish proper or scaly fish.....				

Notes:

- Three classes of vertebrates used as food are as follows:
 - Mammals (beef, etc.)
 - Birds (chicken, etc.)
 - Fish (divided in general into vertebrates and non-vertebrates)
- Reptiles are nutritious, but expensive.

TESTS FOR FRESH AND STALE VERTEBRATE FISH

	EYES	GILLS	FLESH (Firmness, etc.)	ODOR	SCALES	OTHER TESTS
FRESH FISH						
STALE FISH (UNFIT FOR FOOD)	EYES	GILLS	FLESH (Firmness, etc.)	ODOR	SCALES	OTHER TESTS

FURTHER STUDY OF VERTEBRATE FISH

Here consider fresh and dried fish, with respect to (a) retail price, (b) seasons when fish can be purchased. (X = "in season.") Vary list of fish according to local market.

Date of prices given:

FISH	PRICE PER LB.	IN SEASON ALL THE YEAR	JAN. FEB.	MARCH APRIL	MAY JUNE	JULY AUG.	SEPT. OCT.	NOV. DEC.
FRESH								
Bass, black.....								
Carp								
Cisco								
Codfish								
Eulachon.....								
Haddock.....								
Halibut.....								
Herring, sea.....								
Mackerel.....								
Perch.....								
Pickrel.....								
Salmon.....								
Shad.....								
Smelts.....								
Sturgeon.....								
Trout, lake.....								
White fish.....								
DRIED OR SMOKED								
Bowfin.....								
Codfish, salt.....								
Finnan haddie.....								
Herring.....								
White fish.....								

Notes:

1. Check the names of all the fresh-water fish listed
2. To what extent is whale meat used as food in the United States?

CLASSIFICATION OF CHEAP AND EXPENSIVE FISH

Consider vertebrates, fresh and dried, and non-vertebrates. Summarize the two preceding tables by grouping the items according to price under the following headings:

Date of prices given:

\$0.40 OR MORE PER LB.	\$0.35 PER LB.	\$0.30 PER LB.	\$0.28 PER LB.
\$0.22 PER LB.	\$0.16 PER LB.		\$0.10 OR LESS PER LB.

RETAIL PRICES AND USES OF MILK, CREAM, AND EGGS

Date of prices given:

PRODUCT	PRICE PER QT.	PRICE PER LB.	USES IN COOKING
MILK			
Whole, not certified.....			
Whole, certified.....			
Clabber, or sour.....			
Skim.....			
Modified, for infants.....			
Buttermilk, natural.....			
Buttermilk, artificial.....			
Condensed, sweetened.....			
Evaporated, unsweetened.....			
Dried, or desiccated:			
Ordinary.....			
Malted.....			
CREAM			
Single, or restaurant.....			
Double, or table.....			
Triple, or whipping.....			
Certified.....			
Sour.....			
EGGS			
Strictly fresh.....			
Cold-storage.....			
Sterile.....			
Cracked.....			
Dried, or desiccated.....			
Frozen.....			

Notes:

1. Do the prices of the products listed vary at all according to the season?
2. How true is the old saying, "A pint is a pound the whole world round"?
3. Cold-storage eggs are satisfactory for use in many recipes. A "fresh" egg does not necessarily mean a new-laid egg.
4. Sterile eggs keep two or three times as long as fertile eggs.
5. Study the state laws with respect to the required percentage of fat in cream. One large city dairy reports 18, 26, and 40 per cent fat in single, double, and triple creams, respectively.
6. Evaporated milk is used either as milk or as cream. It looks like cream, and often is called evaporated cream. Is its use as cream economical?
7. Consider the nutritive value of all the items listed in the table.

PRESERVATION OF EGGS IN WATER GLASS*(Most practical method of preserving eggs)***Ingredients:**

- 10 qt. pure soft water, boiled and cooled
- 1 qt. water-glass solution
- Eggs, fresh, clean, and with strong shells (see Note 2)

Method:

1. Dissolve the water glass in the water; it is essential that the mixture be well stirred so as to form a thorough solution.
2. Scald a stone jar and set it in a cellar or other darkened room where the temperature is not over 60° F., or 15°-16° C.
3. Place the eggs in the jar, cover with the water-glass solution, then cover the jar tight to avoid evaporation. (If any of the liquid evaporates in the weeks following, add a little boiled water.)

Notes:

1. Note two forms of water glass, both of which may be secured from a druggist:
 - Solution (thick syrup)
 - Powder
2. Avoid cracked eggs. *Do not wash* the eggs. "Sterile" eggs keep better in water glass than do other eggs.
3. A 5-gal. jar holds 15 doz. or more eggs.
4. Observe the following precautions:
 - Do not allow direct sunshine to touch the jars.
 - Do not stir the water-glass solution after the eggs are added.
 - Do not use the water-glass solution more than the one year.
5. State the average price of eggs during each of the following months:
 - January
 - April
 - July
 - October
6. Water-glass eggs are satisfactory for use in baking and for all other cooking purposes except poaching and the cooking of eggs in the shell.

7. Various other methods for preserving eggs have been more or less used. Pupil to check any of the following agents at all efficient in sealing the pores of eggs; note that none of these is considered so good as water glass:

Immersion in:

Brine

Limewater

Varnishing or coating with:

Gelatin

Paraffin

Varnish

Vaseline

Packing small end down in:

Bran

Cork, ground

Lime

Oats

Salt

Sand

Sawdust

Wrapping in paper

COMPARATIVE COSTS OF VARIOUS BRANDS OF GELATIN

Date of prices given:

BRAND (UNFLAVORED)	VOL. OF PKG. (NUMBER OF TB.)	WEIGHT OF PKG. (OZ.)	PRICE OF PKG.	PRICE PER OZ.	YIELD OF JELLY PER PKG.	COST PER QT. OF JELLY
Cox.....						
Keystone.....						
Knox.....						
Minute.....						
Plymouth Rock.....						
French or other sheet gelatin (consider a small piece of this— 1 oz.).....						
"Vegetable gelatin"....						
.....						

Notes:

1. Properly speaking, "vegetable gelatin" (agar agar) has no place in the list; gelatin is an animal product.

2. Jello is one of several brands of flavored gelatin. Enter the names of these brands in a table similar to the foregoing one, then decide whether or not they are an economical purchase; consider sugar content, etc.

3. Classify the various brands of gelatin as follows:

SHEET GELATIN	SHREDDED GELATIN	GRANULATED OR POWDERED GELATIN

4. Which gelatin, or gelatins, are the best with respect to each of the following points?

EASIEST OF MANIPULATION IN GENERAL	MOST DELICATE IN FLAVOR AND ODOR	MOST TENDER (LEAST GLUE-LIKE)	CLEAREST
LIGHTEST IN COLOR	SWELLS MOST READILY IN COLD WATER	DISSOLVES MOST EASILY	CURDLES MILK MOST EASILY (That is, contains the most acid)

HARD AND SOFT CHEESES

Date of prices given:

CHEESE	PRICE PER LB.	COLOR	FLAVOR	MISCELLANEOUS NOTES ON TEXTURE, ETC.
HARD CHEESES				
American				
Brick				
Cheddar				
Cheshire				
Edam				
English Dairy				
Gorgonzola				
Gouda				
Leyden				
Parmesan				
Pineapple				
Roquefort				
Sap Sago				
Stilton				
Swiss				
SOFT CHEESES				
Brie				
Camembert				
Cottage				
Cream, such as Blue Label or Neufchâtel				
Limburger				
Münster				

Notes:

1. The majority of hard cheeses can be grated; most soft cheeses cannot be grated.
2. Parmesan cheese is sold either in the solid or in the grated form.

MANUFACTURE OF CHEESES

CHEESE	KIND OF MILK USED	CLOTTING AGENT USED	WHERE AND HOW RIPENED	OTHER FACTORS IN THE PROCESS
Brie.....
Camembert.....
Cheddar.....
Edam.....
Gorgonzola.....
Gouda.....
Limburger.....
Parmesan.....
Roquefort.....
Swiss.....
.....

Note:

Classify cheeses according to the countries where they are produced.

FRANCE	ITALY	ENGLAND
SWITZERLAND	HOLLAND	UNITED STATES

RETAIL PRICES OF NUTS

Date of prices given:

KIND	PRICE PER LB. IN THE SHELL	PRICE PER LB. SHELLED AND UNSALTED	PRICE PER LB. SHELLED AND SALTED
Almonds, Jordan.....			
Brazil nuts.....			
Butternuts.....			
Chestnuts.....			
Filberts.....			
Hickory nuts.....			
Peanuts, raw.....			
Peanuts, roasted.....			
Pecans.....			
Walnuts, black.....			
Walnuts, California.....			

Notes:

1. After supplying data for this table, determine whether or not it is worth while to shell nuts in the home; consider (a) money, (b) time. (Study percentage of refuse, etc.)
2. Name any of the nuts listed which should not be classed as meat substitutes. Explain.

COMPARATIVE COST OF PROTEIN FOODS

In normal times the following usually are among the cheapest sources of protein:

- Dried legumes (including peanuts and peanut butter)
- Cheese (American and cottage)
- Fish (dried and salted, or smoked)

In general, how do the following compare with the foregoing as to cost of protein content?

- | | |
|-------------------|--------------------------------------|
| Fresh fish | Fruits |
| Meats and poultry | Vegetables (including fresh legumes) |
| Eggs | Breakfast cereals |
| Milk | Flours and meals |
| Nuts | Flour pastes (such as macaroni) |

It is true that milk is a cheap food even at 15 cents a quart. Does this mean that milk is a cheap source of protein?

Note:

In the same way, it would be interesting to group foods (cheap and expensive) with respect to cost of (a) 100 calories, (b) mineral matter. See Rose, *Feeding the Family*, pages 234-238, 426-428.

EXPENSIVE AND CHEAP SOLID FATS

State the exact price of each fat.

Designate as (a) all fats from the animal kingdom; as (b) all from the vegetable kingdom.

Butter:

Creamery

Dairy, brick

Dairy, bulk

Renovated or "cooking"

Sterilized

Butterine (include prices of several grades according to the percentage of butter fat used in the manufacture)

Cottolene

Cottosuet

Crisco

Lard, leaf

Lard, rendered

Nut margarine

Snowdrift

Suet, beef kidney

Suet, beef, other than kidney

Tallow or suet, mutton

Date of retail prices given:

\$0.30 OR MORE PER LB.	\$0.25 PER LB.	\$0.20 PER LB.
\$0.18 PER LB.	\$0.15 PER LB.	\$0.10 OR LESS PER LB.

USES AND APPROXIMATE COMPOSITION OF COMMERCIAL SOLID FATS

Note that certain of these products are compounds of two or more kinds of fat. Consider the following under "uses" (see the second column):

Baking (cakes, pastries, etc.)

Frying

Making of sauces and soups

Sautéing

Etc.

PRODUCT	CHIEF USES IN COOKING	PERCENTAGE AND KINDS OF ANIMAL FAT	PERCENTAGE AND KINDS OF VEGETABLE FAT
Butterine.....			
Cottolene.....			
Cottosuet.....			
Crisco.....			
Nut margarine.....			
Snowdrift.....			
.....			
.....			

BREAKFAST CEREALS**I. Retail Prices of Breakfast Cereals**

Note that any one cereal varies very little as to food value, but for various reasons, such as the following, it often varies greatly in price:

Different methods of treatment in the factory

Various methods of advertising

Date of prices given:

CORN PRODUCTS	PRICE PER LB.	OATS PRODUCTS	PRICE PER LB.
Corn meal.....		Rolled oats.....	
Corn flakes.....		Oatmeal, coarse.....	
Hominy grits.....		Oatmeal, fine.....	
Pearl hominy.....		Scotch oats.....	
.....			
.....			

WHEAT PRODUCTS	PRICE PER LB.	RICE PRODUCTS	PRICE PER LB.
Shredded wheat biscuits		Rice, polished.....	
Pettijohn's breakfast food		Rice, coated (brown)	
Cream of wheat		Broken rice.....	
Wheat flakes		Puffed rice	
Cracked wheat		Rice flakes	
Puffed wheat			
		MIXED PRODUCTS	PRICE PER LB.
Wheat kernels, as sold for seed		Malt breakfast food.....	
.....		Grape-nuts	

II. Prices of Breakfast Cereals by the Box and in Bulk

Date of retail prices given:

CEREAL	WEIGHT OF BOX	PRICE PER LB. BY THE BOX	PRICE PER LB. IN BULK
Corn meal.....			
Rolled oats.....			
Hominy.....			
Oatmeal.....			
Rice.....			

Note :

ADVANTAGES OF BUYING CEREALS BY THE BOX	DISADVANTAGES OF BUYING CEREALS BY THE BOX

III. Commercial Breakfast Cereals

The three following types of cereals are named with regard to whether or not the product has been cooked in the factory. Make additions to the accompanying lists.

Date of retail prices given:

RAW (Requiring much cooking)	PRICE PER LB.	SEMI-COOKED (Requiring some cooking)	PRICE PER LB.	THOROUGHLY COOKED (Requiring no cooking)	PRICE PER LB.
WHOLE GRAIN		FLAKED CEREALS		Corn flakes.....	
Wheat.....		Rolled oats.....		Wheat flakes.....	
.....		Rolled wheat (such as Pettijohn's).....		Puffed rice.....	
FINELY GROUND				Puffed wheat.....	
Farina.....		Flaked rice.....		Grape-nuts.....	
Cream of wheat.....				Shredded wheat biscuits.....	
Corn meal.....				Triscuit.....	
.....					
COARSELY GROUND					
Cracked wheat.....					
Hominy grits.....					
Oatmeal.....					
.....					

Note:

Which of the three groups, raw, semi-cooked, and cooked, is on the whole the most economical purchase? Consider time, labor, cost of fuel (discuss fireless cooker), etc.

FLOURS COMMONLY MANUFACTURED FROM WHEAT

Pupil to state the composition of each flour listed in the table according to the presence or absence of the three following items (the use of plus and minus signs is suggested):

Bran	} Chief parts of a wheat kernel
Germ	
Endosperm	

The endosperm is composed mainly of starch, glutenin, and gliadin. Note that gluten results when the last two are mixed with water.

FLOUR	BRAN (Several coats)	GERM	STARCH FROM ENDOSPERM	GLUTEN FROM ENDOSPERM
Graham.....
Whole-wheat.....
Patent (bread).....
Pastry.....
Gluten.....
Bran.....

Notes:

1. Locate the three chief parts of a wheat kernel in the following diagram:



- a. Bran
- b. Germ
- c. Endosperm

References: Sherman, *Food Products*, pages 270-273; U. S. Dept. Agri., *Farmers' Bulletin 389*, page 9; Hutchison, *Food and the Principles of Dietetics*, chapter xi.

2. The following "subtraction scheme" for the study of wheat flours is of value. (In what respects does the actual manufacture of flours differ from this scheme?) Mention the name of a flour in answer to each of the following questions:

QUESTION	ANSWER
a. What flour is made by grinding the whole kernel, including the germ and all the layers of bran?.....
b. What flour is derived from (a) by deducting the coarsest layers of bran?.....
c. What flour is derived from (b) by deducting the germ and other layers of bran?.....
d. What flour is derived (theoretically) from (c) by deducting most of the gluten?.....
e. What flour is derived from (c) by deducting much of the starch?.....
f. What is derived from (a) by deducting the germ and all the starch and gluten?.....

RETAIL PRICES OF FLOURS, FLOUR PASTES, AND STARCHY POWDERS

Note that the majority of the products listed are derived from cereals.

Date of prices given:

	PRICE PER SACK OR PKG.	PRICE PER LB. BY THE SACK OR PKG.	PRICE PER LB. IN BULK
FLOUR			
Bran.....			
Bread flour:			
1. Pillsbury.....			
2. Ceresota.....			
3.			
Buckwheat flour			
Corn meal.....			
Graham flour.....			
Pastry flour:			
1. Swansdown.....			
2.			
.....			
Potato flour.....			
Rice flour.....			
Rye flour.....			
Whole-wheat flour.....			
FLOUR PASTE			
Macaroni.....			
Noodles.....			
Spaghetti.....			
Vermicelli.....			
POWDER, USED FOR THICKENING SAUCES, ETC.			
Arrowroot.....			
Cornstarch.....			

STUDY OF SUGARS AND SIRUPS

Date of retail prices given:

	RETAIL PRICE PER LB.	REMARKS ON SOURCE, MANUFACTURE, ETC.
SUGARS		
Brown, dark.....		
Brown, medium		
Coffee A, or light brown		
Confectioners' XXXX		
Granulated.....		
.....		
.....		
Loaf:		
Domino.....		
Cube.....		
Maple.....		
Powdered.....		
.....		
.....		
.....		
COMMERCIAL SIRUPS		
Honey, strained.....		
Corn sirup.....		
Molasses, best grade.....		
Molasses, cheap grade.....		
Maple sirup, pure.....		
Maple sirup and cane.....		
.....		
.....		
.....		
.....		
.....		

MISCELLANEOUS FOODS**COMPARATIVE PRICES OF BAKING POWDERS***Date of retail prices given:*

\$0.50 PER LB.	\$0.30 PER LB.	\$0.15 PER LB.

Notes:

1. Enter in the three columns of approximate prices the names of various brands of baking powders, such as the following:

Calumet	Price	Rumford
Durkasco	K. C.	Ryzon
Horsford	Royal	Unrivald

Secure additional information regarding brands by a trip to the local market.

2. Of the tartrate, phosphate, and alum powders, which in general are cheapest? medium priced? most expensive? (Note the following table.)

BAKING POWDERS NAMED ACCORDING TO ACID CONSTITUENT

CREAM-OF-TARTAR OR TARTARIC-ACID POWDERS	PHOSPHATE POWDERS	ALUM POWDERS	"MIXED" POWDERS (Alum and phosphate, etc.)

Notes:

1. Enter in the four columns the names of the various brands of baking powders considered in the preceding exercise.

2. A baking powder is composed of a mixture of the three following materials:

Baking soda (alkaline reaction)

A substance of acid reaction, such as one of the following:

Cream of tartar

Phosphate of lime

Tartaric acid

Alum

A filler, or drying agent, such as cornstarch

A STUDY OF TEAS

Prepare cups of the various teas so as to be able to discuss flavor and color. Test the age of the leaves by unrolling them after steeping; note that the smallest leaves and the first picking produce the finest quality of tea.

Date of retail prices given:

GRADE	PRICE PER LB.	COLOR, FLAVOR, ETC.
BLACK TEAS		
Flowery orange pekoe (choicest, composed of leaf buds at the tip of the twig and of a few blossoms).....		
Orange pekoe (composed of the leaves nearest the buds, that is, the latest leaves to open).....		
Pekoe (the leaves next in size).....		
Souchong (leaves a little larger than pekoe).....		
Congou.....		
Bohea (strong because made of the larger leaves).....		
Formosa oolong (a tea with the flavor of a green tea but the appearance of a black).....		
English Breakfast (a certain blend of black teas).....		
.....		
.....		
GREEN TEAS		
Uncolored (or basket-fired) Japan.....		
Green (or pan-fired) Japan.....		
Gunpowder (Chinese).....		
Young hyson (Chinese).....		
.....		
.....		

Notes:

1. The first four black teas are named in sequence according to the age and flavor of the leaf.

2. There are several grades each of gunpowder and young hyson teas, priced according to the size of the leaves used. In the manufacture of any grade of gunpowder tea, the leaves are rolled tight, the finest grade, pinhead, being made by rolling the smallest leaves.

3. Group black and green teas according to the following headings:

Date of prices given:

\$1.00 OR MORE PER LB.	\$0.75 PER LB.	\$0.60 PER LB.

4. One tea firm makes the following statements concerning tea: "There are about two hundred varieties of teas, and perhaps ten times as many flavors. Tea ranges in value from a few cents per pound for stems up to \$10.00 or more for the very finest leaf."

5. Brooke Bond, Lipton, Tetley, and other brands of tea are found on the market; pupil to specify these other brands. Do not confuse the terms "brands" and "grades" (Pekoe, etc.) as applied to teas. What is meant by "blends" of teas?

6. Pupil to group according to nationality all the teas listed in the table:

Chinese

Indian (strongest of all teas in flavor)

Japanese

7. To what extent are teas grown in the United States?

A STUDY OF DRY SEASONINGS

SEASONING	PRICE PER $\frac{1}{4}$ LB.	USES IN COOKING	PART OF PLANT USED (Such as seed, flower bud, flower, leaf, stem, root, or bark)	COUNTRY WHERE GROWN
-----------	-----------------------------	-----------------	---	---------------------

Notes:

1. Pupil to prepare a table, using the above as headings, entering the following in the left-hand column, and supplying data for the remaining columns:

Allspice	Chives (dried)	Mace	Paralely
Aniseed	Cinnamon	Marjoram, sweet	Pepper, black or white
Basil, sweet	Cloves	Mint	Pepper, cayenne
Bay leaves	Coriander seeds	Mixed baking-spice	Peppercorns
Capers	Cumin seeds	Mixed pickling-spice	Peppers, mild or hot
Caraway seeds	Curry	Mixed poultry-seasoning	(dried)
Cardamom	Dill	Mushrooms (dried)	Poppy seeds
Cassia buds	Fennel seeds	Mustard	Sage
Celery leaves	Flour, browned	Mustard seeds	Salt
Celery salt	Garlic	Nasturtium seeds	Shallot
Celery seeds	Ginger	Nutmeg	Savory, summer
Chervil	Ginger root	Onions (dried)	Tarragon leaves
Chilies (Mexican, etc.)	Horseradish	Onion salt	Thyme
Chili powder	Leeks (dried)	Paprika	Turmeric

2. Pupil to signify whether the items are whole or ground, and whether they are herbs, condiments, or spices.

3. Pupil to prepare an exhibit thus: Mount the unground products on cardboard and place the ground ones in small bottles.

WHOLESALE AND RETAIL PRICES OF VARIOUS HOUSEHOLD SUPPLIES

Date of prices given:

ARTICLE	RETAIL PRICE	WHOLESALE PRICE	ARTICLE	RETAIL PRICE	WHOLESALE PRICE
Almonds.....			Face soap.....		
Apples, fresh.....			Washing soap.....		
Bananas.....			Scouring soap.....		
Baking powder.....			Soap powder.....		
Beans, navy, dried ..			Smoked meats:		
Butter.....			Bacon.....		
Cheese, American ..			Ham.....		
Chocolate.....					
Coffee.....			Fresh meats:		
Cocoa.....			Rack or two fore quarters of lamb ..		
Crackers, soda.....			Rack or two fore quarters of mutton ..		
Crisco.....			Fore quarter of beef ..		
Eggs.....			Fore quarter of veal ..		
Flour, bread			Rib of beef.....		
Lard.....			Loin of pork.....		
Maple sirup.....					
Milk, condensed....					
Molasses.....					
Olive oil.....					
Oranges and lemons ..					
Prunes.....					
Sugar, granulated ..					
Tea.....					
Matches.....					

Notes:

1. Foods are bought retail by the lb., oz., etc.; foods are bought wholesale by the box, bbl., sack, tub, bunch, whole ham or bacon, whole cheese, etc.

2. Supply data as follows:

Price per lb. of bread flour bought by single lb.

Price per lb. of bread flour bought by 5-10 lb. sack

Price per lb. of bread flour bought by 24½ lb. sack

Price per lb. of bread flour bought by bbl., 196 lb.

Supply the same kind of data for corn meal—the price per lb. bought by the lb., pkg., and sack.

3. Note the great saving in buying the following wholesale:

Flavoring extracts

Spices

Canned goods:

Fish

Meats

Fruits

Vegetables

Soups

Etc.

4. Note the possible use of the following in buying wholesale:

City commission merchant

Farmer or firm outside of city; see use of:

Parcel post

Express

Freight

PART D. ADULTERATION OF FOODS

EXPERIMENTS WITH BUTTER

Experiment A

(To test for the purity of butter by the spoon test)

Results produced by heating (a) butter, (b) process butter, and (c) butterine in separate spoons are as follows:

FAT	AMOUNT OF FROTH PRODUCED	AMOUNT OF NOISE PRODUCED
Genuine butter	Much froth	Little noise
Renovated, or process butter	A small amount of froth	A little more noise than with genuine butter
Oleomargarine, or butterine	No froth	Much noise, due to bubbling; the fat sputters and crackles like a mixture of water and grease

Pupil's application of the preceding statements:

Test the purity of various samples of fat. Heat in a teaspoon or tablespoon a small bit of each fat to be tested; stir briskly with a wooden splinter.

Record in the following table the results produced by heating various fats; make observations as to the amounts of froth and noise produced.

FAT	OBSERVATION	INFERENCE
Sample I		
Sample II		
Sample III		
.		
.		
.		

Experiment B*(To differentiate between butter and butterine by means of the odor of the fatty acids)*

PROCESS	OBSERVATION AND CONCLUSION
1. To one tt. add. $\frac{1}{8}$ t. butter. To another tt. add $\frac{1}{8}$ t. butterine, or oleomargarine. Heat both tt. until fat melts. Cool.....
2. To each of the tt. add about $\frac{3}{4}$ " of glycerol-soda solution.* Plug the tt. with cotton. Heat very gently until frothing ceases. Then heat 2-3 min., until whole mass becomes clear. Cool.....
3. To each tt. add 2 t. warm water, and shake to dissolve the soap formed in step 2. Cautiously add dilute sulphuric acid. Note odor of fatty acids.....

*Procure from the instructor the glycerol-soda solution. This is made by dissolving 10 grams of pure sodium hydroxide in 10 cc. of water and then adding this to 180 cc. of pure concentrated glycerol (glycerine).

Notes:

1. A chief reason for our enjoyment of butter is that it has such a delicious fragrance. Butterine is made from good wholesome lats, but it lacks the particular fat that gives butter its special fragrance. The best way to test butter is to smell it.

2. Define volatile substances, soaps, fatty acids.

Experiment C*(To test for the purity of butter by the Waterhouse test)*

The Waterhouse test is as follows:

- Heat nearly to boiling a tt. half full of sweet milk, skimmed or whole.
- Add 1 t. of the fat to be tested and stir with a splint of wood until the fat melts.
- Insert tt. in a dish of ice-water and continue stirring until the fat solidifies.

The results produced by testing (a) butter, (b) process butter, and (c) butterine by the Waterhouse test are as follows:

FAT	RESULT OF WATERHOUSE TEST
Genuine butter.....	Fat cannot be collected in a lump; fat is granulated, that is, scattered in small particles throughout the milk.
Renovated or process butter....	Fat tends to collect as a film on the surface of the milk when the stirring is stopped. It does not clot or gather like oleomargarine, but usually adheres to the wooden splint.
Oleomargarine or butterine.....	Fat can be collected in a lump.

III. Salt-solution test:

Dissolve 2 oz. salt in 1 pt. soft water, then place the egg in the solution. The shell of the egg is porous and allows evaporation; the older the egg, the less dense or the lighter it is because of this evaporation.

Results of experiment:

FRESH EGG	EGG SEVERAL DAYS OLD	VERY STALE EGG

Note:

Although the salt-solution test is used to a considerable extent, yet it has lost significance of late because of the extensive use of cold-storage eggs; pupil to explain.

Experiment: To Study the Effect of Formalin on Milk

PROCESS	OBSERVATION AND CONCLUSION
1. Label the following, and set aside at room temperature:	
a. 1 pt. fresh milk containing no formalin	
b. 1 pt. fresh milk mixed well with a little formalin (40 per cent formaldehyde)	
Stopper each bottle with sterilized cotton.	
2. At the end of three days note the condition of both bottles of milk as regards the following:	
Odor	
Coagulation	
Acidity	
Use either of two tests for acid:	
Litmus-paper test	
Phenolphthalein test. (Secure titrating apparatus from chemical laboratory.)	

Notes:

1. If preferred, test the samples of milk at the end of the first, second, third, etc., days.
2. Test tubes may be substituted for bottles; fill each $\frac{3}{4}$ full of milk, and stopper with cotton.

FOOD ADULTERANTS, SUBSTITUTES, PRESERVATIVES, BLEACHES, AND DYES**I. Adulterants:**

Chicory	Ground nut shells
Water	Cottonseed and peanut oil
Glucose	Gelatin
Beef fat	Saccharin
Cornstarch	Talc

II. Substitutes:

Oleomargarine	Yeast extract
Saccharin	Acetic acid
Lard compounds	Citric acid
Chicory	Cottonseed oil
Glucose	Etc.

III. Preservatives (antiseptic in action):

Salicylic acid and the salicylates	Saltpeter
Boric acid	Cane sugar
Benzoate of soda and benzoic acid	Wood smoke
Sodium chlorid (salt)	Vinegar
Formaldehyde or formalin	Alcohol, ethyl (or grain)
Sulphites and sulphur dioxide	Etc.

IV. Bleaches:

Alum
Indigo
Sulphur dioxide
Etc.

V. Dyes:

Chemicals are sometimes placed in foods to color them; for example, mineral dyes, such as copper sulphate; coal-tar dyes, such as aniline; vegetable and animal dyes. Be sure to inspect the label, as the manufacturer is required to designate the kind of dyes used unless they are animal or vegetable dyes; in that case no official designation is required on the label.

The following-named foods illustrate the possible use of dyes:

Cheap, highly colored candies	Grape juice
Very yellow lemon extract (or other extracts)	Orangeade
Green and other sugar sands used on cakes	Chocolate and other icings
Tomato catsup, highly colored	Green crème de menthe
Phosphates, such as cherry	Cherries
Various bright fruit jellies	Maraschino cherries
Ice-cream cones colored yellow, in imitation of eggs	Strawberry, and other ice creams
	Butter
	"Food colors," in paste or other form

Pupil to supply data for the following table, stating the names of any adulterants, substitutes, preservatives, and bleaches often used in connection with each of the foods listed:

FOOD	ADULTERANT	SUBSTITUTE	PRESERVATIVE	BLEACH
Baking powder.....				
Butter.....				
Catsup.....				
Candy.....				
Cocoa.....				
Coffee.....				
Condiments and spices				
Flour.....				
Fruits, canned.....				
Jellies and jams.....				
Lard.....				
Meat, canned.....				
Meat, fresh.....				
Milk.....				
Mincemeat				
Olive oil.....				
Pickles.....				
Sausage.....				
Sugar.....				
Honey.....				
Maple sirup.....				
Molasses.....				
Tea.....				
Vegetables, canned.....				
Vinegar.....				

Notes:

1. Many of the preservatives and other agents listed (on page 234) are unlawful in nearly all of the states in accordance with the Pure Food and Drug Act of June 30, 1906.
2. Study both the federal and the state pure food laws in the United States.

PRESERVATION OF VARIOUS FOODS: A SUMMARY

List two to six methods of preservation used with each of the following groups of foods:

LEGAL METHODS

EGGS	MEATS AND FISH	FRUITS	VEGETABLES	MILK

ILLEGAL METHODS

EGGS	MEATS AND FISH	FRUITS	VEGETABLES	MILK

PART E. BUSINESS METHODS FOR THE HOUSEHOLD

BUDGETS

Pupil to supply data for the following budget table:

	EXPENDITURE		
	\$1,000 Income	\$1,500 Income	\$2,500 Income
Rent (including heat and light).....			
Food.....			
Clothing.....			
Mother.....			
Father.....			
Girl 16.....			
Boy 12.....			
Girl 9.....			
Wages to helpers.....			
Church.....			
Amusements.....			
Dentist and doctor.....			
Incidentals.....			

Note:

The smaller the income, the greater the *proportion* which must be allowed for food.

BUDGET PROBLEMS

1. You are going to college in the near future. State to what college you are going and plan your clothes accordingly. Make a budget of clothes required and their cost.

2. You are engaged to a young doctor. At the present time he is clearing from \$150 to \$200 a month. What do you estimate as the least you will require to furnish a four-room house or flat? State which you are furnishing.

3. Buy your linens. You may spend from \$50 to \$75. You should watch sales and get the best qualities possible for the money.

4. Your parents promise you a set of solid silver for a wedding gift. They allow you to choose your own pattern. Itemize the articles chosen and prices. Do not exceed \$125.

5. Plan your underwear. You have \$50 to spend. The rest of your clothes must come within \$250. Spend this money to the best advantage. Be sure to choose the clothes you will most need, and get the best quality possible under the circumstances.

6. Furnish a small four-room flat for a workingman on \$250. Omit pictures, as these can be bought slowly on savings.

7. You are living in a small town. Your husband is a mining engineer. The mine in which he is working has been closed, but he is retained as consulting engineer at \$95 a month. Your house rent is \$25. You are renting a room at \$10 a month. Plan your expenditures for one month in summer.

The mine reopens. Your husband's salary is again \$200. Plan expenditures, remembering that coal must be provided for and that you are in a cold climate. However, through the superintendent of the mine you are able to secure coal at \$6.00 a ton, and six tons will be sufficient for the year's supply. Make out your budget of expenditures.

8. A man has a salary of \$1,200. Only $\frac{1}{2}$ of this income may be spent for clothes. Use \$80 of this for the children, John, aged twelve, Mary, aged nine, and the baby. Estimate the clothing for each member of the family, the cost to come within the amount stated.

ANNUAL BUDGET OF HOUSEHOLD EXPENDITURES

Estimate a family's yearly expenses; state the occupation of the father and the general condition of the family.

Date:

ITEM	EXPENDITURE
Carfare	\$.....
Clothing
Doctor, dentist, etc.
Education
Food
Gifts, church, and charity
Incidentals
Laundry
Recreation
Rent (including heat and light)
Savings and insurance
Total

BUDGET OF FOOD EXPENDITURE FOR ONE MONTH

Estimate a family's monthly food expenses; state the occupation of the father and the general condition of the family.

Date:

ITEM	EXPENDITURE	ITEM	EXPENDITURE
Butter.....	\$.....	<i>Brought forward:</i>	\$.....
Cheese.....		Beans.....	
Eggs.....		Cereals.....	
Flour.....		Chocolate and cocoa.....	
Fruit.....		Coffee and tea.....	
Meat and fish.....		Condiments.....	
Milk and cream.....		Gelatin.....	
Potatoes.....		Macaroni, spaghetti, etc.....	
Vegetables.....		Pickles, olives, etc.....	
Sugar.....		Rice.....	
		Sirup.....	
Total.....		Total.....	

ESTIMATE OF KITCHEN FURNISHINGS

Pupil to vary the following list according to judgment, then secure prices:

Bean pot.....	\$.....	<i>Carried forward</i>	\$.....
Brush, scrubbing.....		Pan, dish.....	
Brush, vegetable.....		Pans, loaf (3).....	
Bowls, large (3).....		Pans, muffin.....	
Bowls, small (10).....		Pans, sauce (3).....	
Can opener.....		Pastry board.....	
Colander.....		Plates, pie (4).....	
Corkscrew.....		Roasting pan.....	
Cups, tin measuring (2).....		Rolling pin.....	
Double boiler.....		Sieve, flour.....	
Egg-beater, Dover.....		Spatulas (3).....	
Egg-beater, wire.....		Spoons, table (6).....	
Forks, kitchen (4).....		Spoons, tea (6).....	
Grater.....		Spoons, wooden (2).....	
Knives, paring (4).....		Strainer, fine.....	
Lemon squeezer (glass).....		Strainer, coarse.....	
Masher, wire potato.....		Teakettle.....	
Molds, small (6).....		Teapot.....	
Pans, cake (3).....			
		Total.....	

Note:

The following are given as low-cost menus in *Low Cost Cooking* by Florence Nesbitt, 1917; pupil to compute the cost today of these menus.

BREAKFAST	LUNCH OR SUPPER	DINNER
Fried hominy mush with brown sugar syrup Toast Coffee for adults—Milk for children	Rice soup with croutons Rice and corn-meal muffins	Scalloped salt fish Boiled beets Hot gingerbread Coffee for adults—Milk for children
Corn-meal mush with top milk Toast with date and prune jam Coffee for adults—Milk for children	Hominy baked with cheese Stewed raisins Bread with oleo Tea—Toast tea for children	Corned beef with vegetables Baked potatoes Apple sauce Coffee for adults—Milk for children
Potato cakes Rhubarb sauce Coffee—Milk	Rice and cheese rarebit on toast Apple sauce Milk for children—Tea for adults	Hamburger steak with tomatoes Hashed kohlrabi Oatmeal cookies Iced coffee—Milk
Oatmeal with top milk Fruit toast Coffee for adults—Milk for children	Split peas with carrots Prune rolls Tea—Milk	Pot roast with vegetables Steamed rice with stewed cherries Iced tea—Fruit drink for children
Rice griddle cakes Fried bacon strips Bananas Coffee—Milk	Split-pea loaf Sliced tomatoes Bread with oleo Tea—Milk	Baked croquettes Baked potatoes Hot cinnamon rolls Bananas with lemon juice Lemonade

KEEPING A CASHBOOK AND LEDGER

About the simplest form for keeping household accounts is to enter all receipts and expenditures of cash in a two-column cash book and take the balance each week, then transfer each item to its proper place in the ledger, where it will be easy to sum it up and know how much has been spent for each kind of household expense. The following is a specimen cashbook sheet:

191		RECEIVED	PAID
Jan. 1	Cash on hand	\$20.00	
2	Laundry		\$ 2.00
3	Meats		7.60
3	Carfares		0.50
3	Coal		12.00
4	Salary	50.00	
4	Flour		4.75
5	Cleaning		1.50
6	Fruit		1.50
7	Church		0.50
		<hr/>	<hr/>
		\$70.00	\$30.35
		30.35	
		<hr/>	
	Balance on hand	\$39.65	

Note:

It is well to do all ruling and write all balances, both figures and words, in red ink.

Class exercise:

On page 244 write the following items in the manner indicated above.

March 1. Mrs. Perkins received \$125.00 for expenses for the month. She also had a balance of \$6.00 from last month.

MARCH	PAID CASH	MARCH	PAID CASH
8	Groceries for week, \$6.20	22	Milk for week, \$0.90
8	Meats for week, \$2.40	22	Meat for week, \$2.10
8	Milk for week, \$1.32	22	Groceries for week, \$6.50
8	Clothing for members of family, \$22.50	22	Wages to helpers, \$3.00
8	Wages to helpers, \$3.00	29	Meat for week, \$2.50
9	Telephone bill for month, \$1.50	29	Groceries for week, \$5.00
15	Meat bill for week, \$1.50	29	Milk for week, \$0.90
15	Groceries for week, \$8.00	29	Laundry bill for one month, \$1.50
15	Milk for week, \$0.90	29	Spring water, \$1.00
17	Wages to helpers, \$3.00	29	Ice, \$2.40
19	Church for month, \$5.00	29	Wages to helpers, \$3.00

Note:

Later post from cashbook to ledger on opposite page; that is, enter each amount of money spent under its proper heading.

CASHBOOK.

191	RECEIVED	PAID
Mar. 1		

LEDGER

[illegible]

account. Most banks will open a checking account for a woman on a small deposit. Nearly all banks will start a savings account on \$1.00.

Opening an account.—Go to the bank chosen and the bank clerk will give you all necessary information. You will be required to furnish references. If a checking account is opened, the clerk will enter the amount deposited in a small pass book, which he will give you and which later you will take to the bank whenever you wish to make a deposit. He will also give you a check book. If a savings account is started, the clerk will enter the amount in a savings book; this you will keep, and later take with you to the bank whenever you plan to deposit or withdraw money.

Making deposits.—Whenever you wish to make a deposit, secure from the bank a deposit slip or ticket similar to the form on page 246.

The savings account deposit slip differs slightly from the checking account slip. Be sure to place the savings-book number on every savings deposit slip. Hand in your deposit slip (savings or checking) at the proper window, together with the bank book; the clerk will enter the deposit and return the book to you. See that the entry in the book agrees with your ticket.

CAUTION: Deposit a check immediately after receipt of it, within 24 hr. if possible; use due diligence.

CAUTION: Keep a record of all checks deposited, for in case a check is lost it is charged to your account and it is then necessary to have payment stopped and procure a duplicate check. The bank acts only as your agent and is not responsible beyond due diligence for checks deposited and lost in transit.


Making out checks.—If you wish to pay a bill, take your check book. It will be filled with blanks which should be filled out in the following manner:

STUB		CHECK	
No. 1	\$14.25	CHICAGO, ILL. June 3 1917 No. 1	
June 3 1917		The First National Bank of Englewood 2-109	
To Marshall Field & Co.		PAY TO THE ORDER OF Marshall Field & Co. \$14.25	
For bill rendered		Fourteen and 25/100 DOLLARS	
June 1st		LADIES DEPARTMENT Marian Ross	
Balance forward	DOLLARS 128 CENTS 10		
Am't Deposited	10 00		
Total	138 10		
Am't this Check	14 25		
Ball card for'd	123 85		

First fill out in ink the check stub at the left. Under deposit, enter the amount deposited in bank. From this subtract the amount of your check. This will show the amount left in the bank, or the "balance." Carry this balance over to your next check stub. Whenever you make a new deposit, make note of it on your check stub and add the amount to your previous balance. In this way you can always keep track of the amount you have in the bank.


When you have finished filling out the stub, fill out the check in ink with the date, number of the check, name of person to whom you wish the money paid, and the amount

of money. Sign your name. Write the amount of money, first in figures, then in words. In the case of figures, spaces never should be left before, after, or between amounts; for example, no space should lie between \$ and $1\frac{1}{2}$ in the preceding check. Be sure to begin the written amount at the left margin of the proper line and fill in the remaining space with a wavy line, in order that no one may insert an additional amount. For instance, should you write:

	CHICAGO, ILL. <u>Oct. 6</u> 191 <u>7</u> No. <u>2</u>
	The First National Bank of Englewood 2-109
PAY TO THE ORDER OF <u>John Carson</u>	\$ <u>4</u> ^{<u>20</u>}
<u>Four and 20/100</u>	DOLLARS
LADIES DEPARTMENT	<u>Marian Ross</u>

it would be entirely possible for anyone to insert the word "Twenty," making the amount \$24.20. Write \$2,345.00 as Twenty-three hundred forty-five and $\frac{0}{100}$ Dollars.

Drawing out money.—If you wish to draw money for your personal use, make out a check as follows:

	CHICAGO, ILL. <u>Oct. 8</u> 191 <u>7</u> No. <u>3</u>
	The First National Bank of Englewood 2-109
PAY TO THE ORDER OF <u>Currency</u>	\$ <u>5</u> ^{<u>00</u>}
<u>Five and 00/100</u>	DOLLARS
LADIES DEPARTMENT	<u>Marian Ross</u>

In place of "Currency," you may use the word "Cash" or the word "Myself." This form should be used only when you yourself intend to present the check at the bank (never at a store or office) for payment. It is safer not to make out such a check until one reaches the bank, for such a check (except where the word "Myself" is used) requires no indorsement, and anyone picking it up may cash it. A check containing the word "Myself" requires indorsement.

Indorsements.—Whenever you wish to cash a check, write your name across the back of it in ink. This is called an indorsement. Turn check over toward you and sign at the left-hand end, close to the margin. The name must be written exactly as it is written on the

face of the check. If it is incorrectly spelled on the check, copy it exactly as it appears, and below this write it correctly.

The two following forms of indorsement are approved:

BLANK ENDORSEMENT

Person merely signs his name, for instance:

MARIAN ROSS

ENDORSEMENT IN FULL

Person writes: Pay to the order of (bank, firm, or person)

Name.....

For example:

Pay to the order of

The First National Bank of Duluth

MARIAN ROSS

or

Pay to the order of Mandel Brothers

MARIAN ROSS

The blank indorsement is sufficient if you are to get the money immediately. It is not wise to carry around a check indorsed in blank, for if it is lost, you probably never will recover the money. A blank indorsement makes the check payable to bearer. Wait until you are ready to cash the check before indorsing it.

If you have received a check and wish to send it through the mail or to have it cashed by another person, indorse it in full, making it payable to the bank, firm, or person to whom you wish it paid. If you send such a check out of town, add ten cents for exchange.

If you lose a check, telephone immediately to the person who gave it to you, asking that payment on it be stopped at once. As an added precaution telephone the bank to hold up the check until word is received from the maker.

Bank statements.—The first of every month the bank issues a statement showing the amount deposited during the month, the checks cashed during the month, and the balance on hand at the end of the month. Compare this statement with your check-book stub and see that both are correct. If a person has received a check from you and has not cashed it, this check of course will not show on the statement.

The bank will return with the statement all checks cashed during the month. These are called canceled checks. Keep these canceled checks, for they now act as receipts, showing you have paid this money to the persons named on the checks.

Checking of all bills.—In running a charge account, paid by check, it is wise to keep on file the itemized bills or tickets which accompany all purchases. Then at the end of the week, or the month, before paying the bill, compare it with the small bills or tickets. Check all bills; there may be mistakes in multiplication or addition.

Carrying money while traveling.—If you wish checks for small amounts that can be cashed anywhere, get bankers' traveling checks. These may be obtained for a small fee at your bank.

Sending money out of town.—There are at least four safe ways of sending money out of town:

Postal Money Order: This may be purchased for a few cents at any post-office or postal station.

Express Money Order: This is similar to the postal money order except that it is issued and guaranteed by an express company instead of by the government.

Bank Draft: This may be purchased at a bank; it is free of charge to a customer.

Telegram: This is the quickest way to send money, but for all sums under \$100.00 it is generally the most expensive way to send it.

If any of the first three is lost in the mail or paid to the wrong person, you can obtain a duplicate.

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